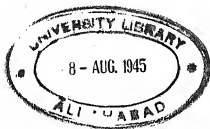


PROJECTS
IN
INDIAN EDUCATION



THE EDUCATION OF INDIA SERIES

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PROJECTS IN INDIAN EDUCATION.—Experiments in the Project Method in Indian Schools. Described by various writers and edited by Alice B. Van Doren, B.A. Introduction by William H. Kilpatrick, Ph.D., LL.D. Illustrated.

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PROJECTS IN INDIAN EDUCATION

Experiments in the Project Method in Indian Schools

DESCRIBED BY VARIOUS WRITERS

AND

EDITED BY

ALICE B. VAN DOREN, B.A.

SOMETIME EDUCATIONAL SECRETARY, NATIONAL CHRISTIAN COUNCIL
OF INDIA, BURMA AND CEYLON

WITH INTRODUCTION BY

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TEACHERS' COLLEGE, NEW YORK



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FOREWORD

THE study that I was recently privileged to make of the school problem in India has convinced me that the Project idea, as I observed it in operation at Moga in the Punjab and at Udupiddi in Ceylon, is peculiarly fitted to meet the situation. The demands being made upon India for changes, particularly in village and agricultural life, to meet more adequately the needs of the developing civilization, are such as to require just the kind of thing that these schools seem best able to give. The need is for very much more than mere book-learning. It is primarily for a changed outlook on life as well as actual use of better ways of meeting the demands on life. From the individual and personal side there is need that the growing child should deal with things, with the elements of his or her own family and community life, in such a way as to give an actual working appreciation of the relation of intelligent effort to result in connection with these things, and consequently a greater willingness to use and value intelligence in adapting old ways to new demands. From the social side, there is need of schools that will bring this changed personal outlook to bear on the actual improvement of home and village life and farming activities. While the children, when properly directed, will, we hope, be far more initiating and resourceful than hitherto, it is not necessary to expect actual cultural creation from their hands.

Good teaching will guide them to find the best available that has already been thought out. But the stressing of personal initiative on the part of the pupils, as is done under the Project idea, will give the children a firmer and clearer grasp of the meaning of the things they do, and their success in working with them will add the favourable disposition to use them later as opportunity may offer.

It would thus appear that the Project School has the double excellence of enlisting pupil-resources as does no other type of education, while on the other hand it makes more probable a reconstruction of home and community life than is so far promised on any other basis yet proposed. Moreover, for the few who will go on to the Secondary School, it affords preparation of a kind exactly needed in this situation. So far, the Secondary School has been exclusively literary and but little adapted to putting the pupil helpfully into first-hand contact with actual Indian life. So much has this been true that any effort at instruction in the sciences and in agriculture has too often failed through abstractness. The Project idea in the Primary School should make possible in the Secondary School (especially when it also is remade, as we may hope) a different and much more successful attack on science and the applications of science. So that whether the Primary School is to furnish for any the only formal schooling to be had, or whether the pupils are to go on to the Secondary School, in either event the first-hand contact with things and the intelligent manipulation of them (especially as these are

related to the social demands of life about them) promise best for the kind of education that seems particularly needed in India under the new conditions. It may be further added that whereas the complaint is widespread that Indian schools as hitherto run have tended to separate the Indian boy from his Indian life, exactly the contrary is to be expected from the school run on a Project basis. When we consider, then, how adapted the Project School is to the demands of village life, and how significant the village is in the Indian situation, it seems hardly too much to say that a village school run properly on the Project idea is the greatest single hope that conscious education can hold out for reaching and improving the great masses of Indian people.)

In furtherance of this aim, this book has been made. As one who had had some part in formulating the theory underlying the method, and as one who feels himself deeply interested in India and in the furtherance of its life, I deem it an honour as it is a pleasure to be asked to give these few words of introduction.

*Teachers' College,
Columbia University,
New York City.*

WILLIAM H. KILPATRICK.

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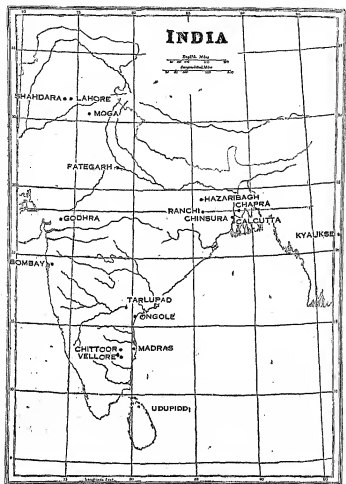
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The Location of the Schools where these Projects were tried is roughly indicated in the above Sketch Map.

INTRODUCTION

WHAT DOES THE PROJECT METHOD INVOLVE ?

The Growth of Project Principles.

THE Project Principle is not a new and sudden development in education. Rather it is a natural growth and expansion of the best educational thinking of the past. Jesus said, "He that willeth to do His will, shall know". In other words, learning comes from wholehearted purposing. This is the essence of the Project Method; if a person wills to do a thing, he learns it. Wise teachers have always sought to stimulate their pupils to purposeful activity. The accomplishment of this aim is the test of success in teaching. What was formerly a vague, undefined atmosphere of good teaching has now been crystallized in definite form as the focus of progressive education.

In Western countries these principles have functioned most clearly in the home, the field and the playground, even though they have not been absent from the life of the best schools. The city boy who spends his Saturdays "playing" with electric cells, radio and lights, and the girl who plans and makes an outfit of clothing for her doll, are unconsciously carrying out the principles of this method. In the pioneer days of America, the farmer's daughter who assisted her father and mother in all the processes by which wool passed from the back of the sheep through shearing, washing, carding, spinning and weaving, until it appeared as a blanket on the bed or a coat on her father's back, was sharing in the great project of clothing the family. When Indian cottage industries again come into their own, the Project Method will be a part of home as well as of school life.

The term "Project Method" has been misunderstood in India. Just as "Kindergarten" used to be considered synonymous with certain fixed periods for paper-weaving or stick-laying, so casual observers have taken the Project Method to mean the building of a house in the First Class, the running of a Post Office in the Fifth, or even the teaching of reading by means of the long-suffering tale of the Little Red Hen. Class One may build a house, and Class Two may construct a village;—and yet neither teachers nor pupils may be within hailing distance of the principles that underlie Project teaching.

Let us then establish, as our first working principle, the fact that the Project Method does not connote the use of any fixed form of teaching, or even the doing of a piece of work described in a syllabus. It means rather the spontaneous development of forms suited to local conditions and needs, and hence never quite the same in any two situations. By Project Teaching we mean the use in education of "purposeful activity"—of purposing, planning, executing and judging by the children themselves, while the teacher acts sometimes as leader, but more often as an older, wiser friend and guide.

Spontaneity—an Essential Factor.

In the publishing of a book such as this, the objection may be raised that the believer in the Project Principle is really working against his own philosophy. A teacher who purchases this book may do so with the idea that out of the projects discussed herein, he should be able to find at least one or two that could be carried out in his own school in just the way they are described here. Because of this possible misconception, we must note that the essence of the Project Principle is its spontaneity; and hence variation from any described procedure is bound to occur. A project which arises through child-purposing or even through teacher-purposing is a natural growth, adapting itself to its own environment. A project, like a tree,

does not bear transplanting well; yet the seed of the tree may be dropped in a new locality and will then grow, adapting itself to soil, temperature and water supply. So it is with the experiments discussed in this book. They cannot be carried away and set down bodily in new surroundings; yet the ideas which inspired them may germinate in the minds of teachers and pupils, and may grow naturally in other schools into forms suitable to the new conditions. In short, these projects are intended to be sample activities, not copies to be slavishly imitated, or rules to be blindly followed. It may safely be said that where the seed of the Project Principle is sown, no two of the plants which spring from it will ever be exactly alike. Nature abhors uniformity.

The Gradual Introduction of Projects.

Many educationists fight shy of the Project Method, because they feel unequal to the risk of scrapping their present system of teaching and substituting for it something new in which they have had no experience. Such persons may well heed the advice of Prof. Kilpatrick in Chapter XVI of *How We Learn*⁽¹⁾. No one need hesitate to adopt his suggestion of experimenting for one period a week with projects suggested by the children. The most lively and energetic class in the school can be chosen for the experiment, and the best teachers selected to explore with them the possibilities of child-purposing. If one period a week proves worth while, the time can be gradually increased until finally much of the routine instruction in 'the three R's' is attached to the live interests of the pupils. "Let each of us begin where he is, and advance toward the ideal as far as he can, considering all the circumstances. What the situation is, and how far each of us can go, I do not know. The conditions will differ greatly. However, I can say that the better schools are doing more and more of their work through

(1) *How We Learn: The Psychological Basis of the Project Method.*
By Wm. H. Kilpatrick. (Association Press, Calcutta.)

the children's own purposes. . . . Start where you are, and go in the right direction only as far as you can see and as fast as you can."⁽¹⁾

For this one period a week, what will be the method of procedure? The teacher sits down with the children and asks them to suggest things they would like to do in that weekly period. The response will depend upon the amount of thinking, choosing, judging and purposing which have been previously encouraged in that particular school. I have seen many schools where such a query would be met with the blank silence of amazement, and with entire failure to grasp the meaning of the proposal. The class would consider that the teacher had suddenly gone mad. In such schools the first projects will need to be suggested by the teacher. In other schools where pupils have always been encouraged to ask questions, to judge results, to choose between alternatives, the teacher will be overwhelmed by conflicting suggestions. One child wants to act a drama, another to learn a song, still another to play a game, others to go for a walk, or to start some new kind of handwork. In this case the teacher will help and guide the class in the selection of the most desirable of the plans proposed.

The Place of the Teacher.

The quality of the teacher's guidance will be shown by the amount of "wholeheartedness" present in the activity. The general objective is that the children should "increase" while the teacher "decreases". In the earlier stages, this will take place very slowly. It is not enough that the children are carrying out a voluntary activity; the activity must also be one worthy of their time and effort. To guide in the making of such choices, and where necessary, to suggest possible alternatives is the function of the teacher. He—or she—will also find it necessary to help pupils over periods of discouragement and lack of interest,

(1) *How We Learn*, pp. 78, 79.

and to lead them in the final process of judging the merits and defects of their work.

Types of Projects.

Projects may be classified in various ways: for our present purpose one may think of them as divided into *major*, and *minor*, though there is no strict line of demarcation between the two. By a 'major project' is meant one that occupies a class during a term, or even a year, and that serves as a centre to which much of the formal school teaching is related. They represent a general idea or interest within which many smaller activities known as 'units of work' or 'minor projects' are developed. Major projects are ambitious and should not, generally speaking, be attempted except by teachers who have already had some training or experience in the use of the Project Principle. By 'minor projects' we mean those brief enough to be completed in any length of time from a day to a month. They are also 'minor' in that they are not regarded as the centre of the whole work of the school. It is with projects of this sort that the inexperienced teacher will dare to experiment. In this book will be found examples of both types of projects, along with others whose classification is not so easy to determine.

What connection has the Project with the Government Curriculum?

Some may ask: Will it be possible to include the whole of the required work of a given year within the scope of a major project? The answer is that, even if possible, it is probably not desirable. The project is not merely another name for correlation of subject-matter. The danger of such an attempt is that it is almost sure to result in artificiality—in dragging in subject-matter which has no genuine connection with the project in hand. The 'Moga' procedure in this case may well be noted and followed:—"We recognize the Government Code, and each class in the course of the year completes practically all the Government

requirements. But we insist on the teachers not stretching the project—as some teachers do—to cover the syllabus. What grows quite naturally out of the project and is class requirement, is part of the project; what does not easily grow out of it, but must be done, is just class-room work which must be covered before the end of the year”, and is honestly recognized as such.

Does the Project Method involve Expense?

In the minds of many persons the idea of using the Project Method or any other form of teaching requiring hand-work is rejected, especially for village schools, because of the expense which they think it involves for materials. Such persons forget that a real project should be carried out in its *natural* setting. An expensive project carried out in an Indian village would not be natural; and hence in the real sense would not rightly come under the head of a project at all. A rural school that depends upon foreign toys, paints, tools and apparatus is an anomaly, for it has no connection with its own environment. It is training its children not into harmony with their home life but away from it. A Project School in a village will develop its work by means of the materials that are afforded by its natural environment. These may be clay or stone; they may be cotton or hemp or aloe fibre; they may involve the use of seeds or shells or pebbles or broom splints. Bazaar-dyes or charcoal or home-made ink may be made the medium of artistic expression; its forms will be conditioned by the leaves and flowers of the locality, by the ornamental stitches used in the garments of its women, or (as in Miss Rivett's art-work) by the characters and script of its particular language. In some cases, as in the Tape-weaving Projects described by Dr. Olcott in Chapter XV, some of the activities made will have a market value and will be put to the credit rather than to the debit side of the school account. In the case of town schools, attention is called to Miss Newton's valuable experiment with the contents of the waste-basket in Chapter I.

Butter-tins, empty reels, waste-paper, cardboard, "corrugated" book wrappings—all these are a useful part of the project equipment of the town school, which has, of course, a greater wealth of available material than the village.

The Need of Supervision.

One important obstacle should not be left unmentioned. All that has been said in this chapter presupposes a certain amount of ingenuity and even originality in the teacher. Certainly initiative is required. But how far can teachers of elementary grade be expected, after only one or two years in the Training School, to carry these new methods to their village environment? To what extent, and with what success can they work along lines so foreign to their own home and school experience? Can they be educationally "born again" and leap all of a sudden from a background of 'memorization-as-education', of 'subservience-to-authority', and 'obedience-the-one-virtue', to the opposite theory of life and learning? Can they face the opposition of the village with its inbred conservatism of outlook, the ridicule of minor inspecting officers, and the half-tolerant scepticism of the supervising missionary? In most cases they cannot and will not bear up under any of these things. This is the crux of the question and is a problem which will need to be faced frankly and fairly. Elementary teachers trained for one or two years in the Project Method, when placed in an unsympathetic environment, will in most cases "revert to type" with discouraging speed. What is to be done about it? Shall we then give up the Project as a fine theory, but impossible under the present conditions of rural India?

The only solution of this problem known to the writer is that of adequate supervision. For a successful experiment along these lines the reader is referred to the plans followed in the Arcot Assembly villages, as described by Dr. Mason Olcott in Chapter XIII

of *Fourteen Experiments in Rural Education**. Through the visits of supervisors or "helping-teachers", by means of annual 'refresher courses' or 'teachers' institutes', and through the keeping up of a really close connection between the Training School and the teachers who have gone out from it, encouragement and practical help can be given to the isolated rural teachers. Unless help can be provided in some such form, it is too much to expect that men and women of small education will be able to stand under the adverse conditions.

The Training of Rural Teachers.

One of the hindrances to satisfactory work on the part of the rural teacher is the fact that so often his training has been carried on under conditions so far superior to those obtaining in the village school to which he is eventually sent, that little of this training can be carried over to the new situation. From a training school equipped with a moderately adequate building and at least a minimum of books and teaching apparatus, he is suddenly set down in a one-room thatched house, with three or four classes to teach, and none of the things upon which he has learned to rely for good teaching. Is it any wonder that he becomes discouraged in the attempt to follow new methods under these conditions? One may almost say that the better the training-school, the worse it is for the teacher who goes from it to the village. What we need is the type of training school that approximates to village conditions. It should have attached to it a small school-house built on the model of the average village school of the district. In this the student should be taught to manage two or three classes at a time. He should be furnished with only such furniture, blackboards, globes, maps and manuscript text-books as he is being trained himself to make. When he leaves such a training school for the village,

* Published by the Association Press, Calcutta, 1928.

he will find himself standing on familiar ground, and his training will transfer to the new situation which so closely resembles the old.

The contents of this book afford a cheering proof of the adaptability of this new method to Indian conditions. These small beginnings need to be carried on through the experimental activity not merely of those who can be claimed as experts in this method, but rather of those who know little to start with, but are willing to "learn by doing". For all such, three steps of procedure are urged: first, the visiting of any school in which the new method is now in use; then the study of as many as possible of the books named in the appended bibliography, particularly the two by Dr. Kilpatrick, *How We Learn* and *Foundations of Method*; thirdly, courage to make a small beginning in the way of actual experiment. If we can enlist the teachers of India in experiment and exploration, we shall leave the realm of abstract theory for that of concrete fact.

ALICE B. VAN DOREN.





PROLOGUE

"QUESTING FOR THE BEAUTIFUL"

(Written and decorated by the Standard VI Girls of the United Missionary High School, Calcutta.)

*N*EVER before have we worshipped at the shrine of Contemplation, as writers needs must do; but now we find ourselves compelled to take shelter there as devotees.

No need is there for formal preface: we have indeed no ability to compose such. So let us without apology begin, forthwith, to describe the beauty of the work of our own hands!

When first we set out, in our eagerness, to beautify vessels of clay, we were quite beside ourselves with enthusiasm as we worked with brush and paint upon them. Nor were we alone in our passionate devotion to our task. Our 'Didi' was quite as zealous as we, flitting about, like a butterfly, first to one, then to another.

A craze, did you say?—May be.

Potters on their wheel form water-pots and lamps and other attractive shapes, but not always do they stay to decorate them. This, joyously, we undertook to do. Our hands were coloured with paint. (We are not ashamed to say so, even though the confession be proof of our amateurishness!) That did not daunt us. Sometimes there were paint-marks on our 'Didi's' sari and

our own. If they were black,—well, they looked like mosquitoes! If the marks were of other colours,—we found resemblances to the gods of the Non-Aryans—demons, snakes, trees! Memories of History-Lessons! All manner of images we made on our arms. Tattooing it seemed like. 'Didi' was sad. We were wasting paint. Oh, but it was a craze, indeed!

Do not imagine we were simply playing at smearing colours on. That would have been futile.

With vivid recollections of our days in the Kindergarten we took one of our pretty Bengali letters, a vowel or a consonant, and we wove it, each in her own fashion, letting her imagination have full play, into designs for our pottery, with leaves and flowers and animals and flaming volcanoes.

Strangely enough, these designs we found then to be just exactly what we were needing for the illuminated margins we had set our hearts upon having on each page of 'The Children's Bible' we were making. We had written, in our best lettering, of God the Father and His world. And it was only fitting that these margins of our manuscript should represent something of the loveliness of His Creation.

Then too in our needlework we wanted designs for our embroidering, and here was wealth of our own devising all ready to find expression anew in the old 'Kantha' stitchery, beloved of Bengal.

How pleased were we when we saw our strenuous endeavours resulting in things of beauty!

Our Drawing and Painting never were irksome. Regardless of hunger, thirst, play, even dust, we would sometimes spend the whole of tiffin-time trying hard to finish some as yet incomplete work of art. Our 'Didi' too ignored the pangs of hunger to stay with us. Each day, 'tis true, someone murmured, as she passed through our class-room, a gentle suggestion that there was fresh air outside. And we had to go—for a moment—but

the lure of our handiwork proving too strong to be resisted, we were soon back again and immersed in it, all else sinking into oblivion.

Unobservant? We are so no longer. If we see a 'pattern' anywhere, we consider whether, perchance, we can adapt it to some purpose of ours.

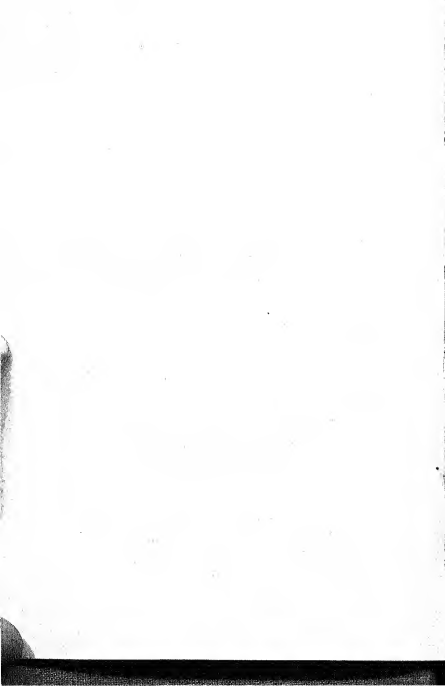
If it seems suitable for any work we are engaged upon, we draw it. In the simplest lines, be they straight or curved, we see potential designs. The universe has become for us one vast treasure-house filled with..... 'patterns'! And how rich we have found this India of ours to be! Did you ever know anyone so bent on seeking riches? Let us tell you in verse about our quest.

We love all beauteous things :
Busy are we in the search for them.
Simple things, how they delight us,
Pleasing to our eyes!
Where'er we go we discern
Something of loveliness to behold ;
Wherever we find beauty
We joy in making it our own.

Our latest ambition is to paint the walls of our class-room.
Suitable 'Mural Frescoes' we are now contemplating!

(Translated from the Bengali by ELEANOR RIVETT.)

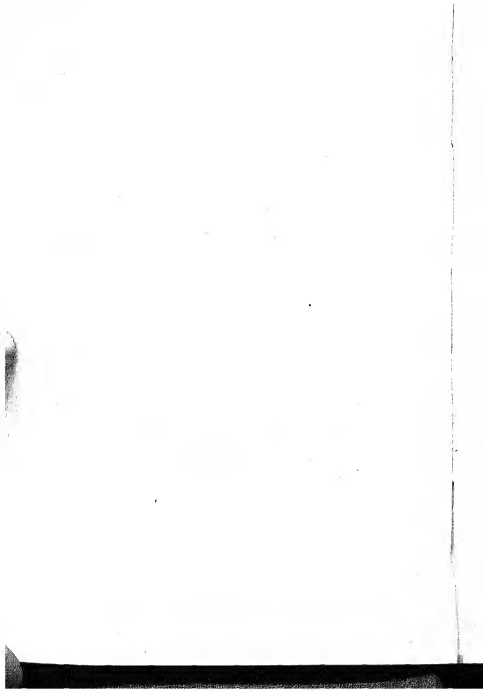




PART I

MINOR PROJECTS, EASY TO ADOPT AND USE

1. "CIRCUSES, CABBAGES AND CROWNS"
2. "TOWELS AND TIME"



I

"CIRCUSES, CABBAGES AND CROWNS"

THE Godhra Institution consists of three schools ; one for small boys studying up to the Fourth Standard, one for girls studying up to Vernacular Final and one for teachers who are being trained for Vernacular Primary and Middle Schools. Our graduates teach in village schools, in small town schools and city schools. In our training work we try to keep these various types of schools in mind. Our church has a large number of village schools in this area, and an effort is made to keep a close connection between these schools and this training institution. We maintain two hostels ; one for girls and one for boys where a majority of the students live.

The Government Code is followed in all three schools, and the regular Government inspections and examinations are carried on. We have found the higher Inspecting Officers very much interested in our experiments and always ready to co-operate in the introduction of new methods of teaching.

I have been asked to write regarding our experience in the use of the Project Method of teaching. In my study with Dr. Kilpatrick in 1919 he advised us to begin where we were, and to advance toward the ideal as far as we could under the circumstances. Like all others who are experimenting with new methods we have to employ teachers who are not trained to use these methods. Suitable vernacular literature is almost entirely lacking, either for students or for teachers in training. Very few of our teachers know any English, and the material has had to be worked out step by step. However, we feel that we have made some progress. We have found our greatest encouragement in the keenness of the teachers to make new

ventures, and in the eagerness of the students to undertake them.

We have found our greatest success in the use of minor projects, or 'activities' as they are sometimes called. These activities have been carried on under various circumstances, sometimes in connection with special subjects and sometimes as a separate undertaking. All have been a part of the students' real experience, and much of the material required by the Code has been taught through these activities. Some, like the gardening project, are found in all the classes, continue throughout the school year, and are used as a means of teaching some portion of nearly every subject in the curriculum; while others are more limited in their scope and may extend over only a few days or weeks. At the present time, several minor projects are being carried on in each class.

(a) *The 'Parrot' Project.*

The First Standard children have a 'Class Parrot', which they care for and greatly enjoy. Parrot-study forms a part of the Government Code in the Nature-study course. They themselves have composed stories about the parrot, telling about his food, his habits, his colouring, etc. He has formed the basis for interesting lessons in oral composition. They have modelled him in clay and coloured their models. Their teacher found a song which they love to sing to him. During the week-end he is taken to the hostel and is allowed to stay on the matron's verandah. The children share their food and garden fruit and vegetables with him, and altogether he is a delightful addition to the First Standard.

(b) *A 'Bible' Project.*

The story of Moses being one of the children's favourite Bible lessons, I was not surprised to find that they had chosen to represent the story on their sand-table. The river was represented by pieces of glass placed over blue paper. The trees were of twigs

covered with green paper. The Princess was cut from waste cardboard and the crown was covered with the silver paper which comes wrapped around carbolic soap. Although the children saw some incongruity in a princess wearing a crown when taking her morning bath, they said they had to distinguish her from the rest of the women! Baby Moses was made of clay, and his basket was woven from dried grasses which are abundant at this season. The children showed it to me in great excitement and explained all about the story.

(c) *The 'Doll' Project.*

The Doll Project is the most popular one carried on in the First Standard. Each girl is given a doll when she enters the class. The dolls have usually been supplied by friends in America. We have also made use of cloth dolls made by the training-school students. Each girl has her very own doll, and she keeps it in the class until she finishes the Third Standard; by that time she has kept it for three years and has had many interesting and helpful experiences with it. One Third Standard girl took her dolly home for vacation, and when she returned the dolly had a new suit of clothes made from scraps of cloth which the little girl had picked up in her village home. This experience has developed initiative. There is also a large 'Class Doll' in the First Standard; and by making its jacket and skirt and sewing on its sari-border, the children have thereby covered the prescribed sewing course for this standard. They make interesting beds for their dolls; sometimes of old slate frames with empty reels for legs, and sometimes of pieces of wood nailed together with great difficulty. One such bed was coloured red with yellow stripes, the colour-wash being made from bazaar colours; and string or rags are used for taping the beds. Dolly's bed must have a mattress, a pillow, sheets and a pillow-case, and dolly must have a handkerchief. The dolls are a real part of the school life of the children; they

enter into their games, their plays, their songs and one day I found them dramatizing a hygiene lesson. "Dolly was sick ; she had refused to take her medicine, and the fever was very high, as you could see from the red colour of her cheeks." One of the little girls played the part of doctor and gave excellent instructions for the care of the sick baby !

(d) A 'Bhil Home' Project.

The Second Standard boys and girls, in their study of home geography, made a visit to the homes of some of our *Bhil* neighbours, the *Bhils* being an aboriginal tribe of this area. Since they were to accompany the Bible-women, they prepared some songs and Scripture verses and made their contribution toward the service. After the service was over, they were allowed to visit the homes and the surroundings.

The Project consisted of two parts, the sand-table reproduction of the home, and a class-book containing the information they had gathered. The book was illustrated with drawings and pictures. The sand-table activities were done largely with waste materials, and the teachers and students showed great skill and ingenuity in working them out.

The home was made of mud and bamboos with a thatched roof of twigs and grass. Clay was used for cooking vessels, water-pots and grain receptacles. Grasses were utilized in making baskets for grain and other purposes. Wonderful clay bullocks were drawing loads of wood or grass or grain loaded on carts constructed from bits of wood. Here again the empty reels were used for wheels, one reel cut in two being sufficient for two cart-wheels. Cattle cut from cardboard or made from clay were tied to poles outside the home. The boys were keen to construct ploughs, and searched everywhere for pieces of wood with which to make them. The pliable bit of tin which is used in the covers of biscuit tins made excellent garden-implements for the *Bhil* fields.

Some Educational Values derived from the Experience with the Bhil Project.

1. The children practised co-operation in the construction of their sand-table and book.

2. They gathered information and shared their experiences with one another.

3. They learned many things concerning the manners and customs of their Bhil neighbours, and noted the similarities and differences between the Bhil customs and their own.

4. They found that there were some things that they could learn from the Bhil people. Friendly and sympathetic attitudes were cultivated and also a fuller appreciation of the problems and difficulties which the Bhils had to meet.

5. They learned how these primitive people build their own homes, care for their cattle and live independently of carpenters, masons and other skilled mechanics; in short, how their homes are adapted to their economic and social conditions.

6. They gained historical knowledge concerning the place held by this aboriginal tribe in the history of this Province.

(e) The 'Circus' Project.

Some very interesting creative work was motivated by a travelling circus which came to town in July. Descriptive notes and pencil-sketches with a view to making a model were made by the students, who attended in a body; and all kinds of materials for this purpose were collected from the missionaries' offices, from the store-room and from the homes of the students. On the cardboard or wooden grandstands were seated men, women, boys and girls, representing the various types of people living in Godhra, and the colouring of their turbans, saris, coats and frocks was accurately reproduced. The students spent much time representing various members of the staff. The performing animals were given a prominent place, and the animal-trainer was a man of great importance.

Clay makes wonderful tigers, lions, horses and goats, and with a little colour it looks like a real circus. Old chalk-boxes with reels for wheels made excellent wagons for the animals. The children were very particular to have them arranged exactly like the ones at the circus. The tight rope-walker was an Indian girl, and the children marvelled at the way she balanced herself with an umbrella. They were much impressed by the performing cyclists, and by models and drawings they made brave efforts to reproduce them in their sand-table.

Some Educational Values derived from the Experience with the Circus.

1. They learned the characteristic modes of dress of the various groups of the citizens of Godhra—Muhammadans, Parsis, Hindus and Christians.

2. An opportunity was given for studying colour in its relation to dress and clothing.

3. In arranging the sand-table they had practical experience in studying proportion and arrangement so that the various parts would fit together.

4. An excellent opportunity was given to study the life and the habits of the various animals.

5. Goats performed with lions and tigers. This impressed the training-school students very much. One remarked, "They are very different in disposition but they learn to live and work together." One teacher said, "The animal-trainer is able to change the nature of these fierce animals and to bring them into control through the right kind of training; and this is a lesson to us teachers of how much we can do in training character by using the right methods."

6. Interesting number-work was taught by counting the seats and the people on each seat and in the whole tent. The entrance fee was one rupee for chairs, four annas for grand-stand seats, and two annas to sit on the ground. What did it cost each class to go to the circus? What were the total receipts?

7. One class is now making use of the experience in order to study the action of pulleys and levers, also the centre of gravity and balance.

8. The experience has given new impetus to the drill and game periods. Even the girls 'play circus' and turn handsprings!

(f) *The Sanitary Village.*

The Third Standard worked out an interesting project in hygiene by means of which they covered all the requirements for the Hygiene Code—and much in addition—and also had a delightful time in doing it. The activity consisted in constructing a 'sanitary village', with its buildings made of the corrugated cardboard which comes wrapped around bottles and books, and made excellent 'roofs'. One outstanding feature was the 'public garden' in the centre of the village. This was to be used as a playground and for general recreation, and was laid out with walks, bordered with flower-pots and trees. The clay water-pots were coloured red by using brick-dust mixed with water; and an old tooth-brush was used for the paint-brush!

Some of the things which the students learned through this experience were: (1) The necessity for light and air in the homes; (2) The necessity for exercise; (3) The proper care of refuse; (4) The duties of the various officers of a village; (5) The importance of a sanitary well; (6) The value of lighted streets in a village; (7) Importance of housing the cattle separately from the families; (8) The place of a hospital in the village, and something about contagious diseases; (9) Something about rural management and public welfare; (10) The necessity for education and the place for the school, the library and the Press in the village; (11) The use of good seeds which may be obtained from the Government storehouse.

(g) *Book-Binding.*

Our school books needed repairs, and our school magazines needed covers. In this case we invited a

Muhammadian friend, himself a professional book-binder, to give us some demonstration lessons in simple book-binding. The training school students and the staffs of the three schools were present for these demonstrations. As a result, the training-school students have repaired all their own books this year, and the Primary School teachers are teaching the boys and girls to repair theirs. We hope later to make a study of records,—leading up to the making of books.

(h) *Chickens, Goats and Rabbits.*

The Fourth Standard is divided into two sections ; the one carrying on a Chicken Project and the other a Rabbit Project. These animals are kept in the hostel, and the girls take turns in caring for them. A record is kept of their experiences with the rabbits and chickens, and sketches are made of them during the various stages of their development. The children share their garden products with their pets and take a keen interest in all the happenings. When the first family of five 'baby bunnies' arrived they celebrated the event with a tea party. They also have a family of goats which they care for, and when the girls go for their evening walk the goats have to accompany them. The girls are very keen on their Chicken Project. They sell some of their eggs to the school infirmary and some to the various cottages in the hostel. The matron has taught them several ways of combining eggs with *masālas* and vegetables. The class has sold two cocks in order to help to improve the breeds in other places, and the last one of these went to a Christian Bhil village.

(i) *Household Arts.*

We are introducing various activities of this type into the regular school courses. They are usually motivated by a special need. For instance, the training-school students wanted to have a picnic ; and so they made their own refreshments, which consisted

of several kinds of Indian sweets, *sāve* and *bhajias*. When these students went home for Christmas holidays they made similar sweets for their families and thus had the joy and satisfaction of contributing something to the 'family Christmas'. The sweets were clean and healthy and were procured at half the expense of bazaar sweets.

Other activities also deserve a brief mention. For instance, when the Kindergarten class was presented with some tiny cups and saucers, they wanted to have a tea-party and so the Vernacular Final class prepared tea and *puris* for them. Some of the girls have also learnt to tin their own cooking vessels and take great delight in doing it. Several classes go to the river and do their laundry work under the supervision of the teachers. When the Fourth Standard girls wanted soap for their shop, they and the teachers obtained a recipe and made some excellent soap. The cement floors are cold to sit on in the winter season; so the Fourth Standard girls and boys, under the guidance of the teachers, made some mats, some from cement-bags and some from carpet-rugs woven on crude frames which they themselves made. They washed the cement bags and embroidered them with outlines of animals, birds, flowers, etc.

(j) *The School Shop and Garden.*

This serves the community in many ways. On their own initiative the students sent a notice around to their patrons asking them to suggest other things which they might keep in their shop. In the shop they are practising accuracy, neatness, honesty and courtesy. The garden products are also sold through the shop. The income from the school gardens is being used for the purchase of library books, and the library hour is becoming very popular.

The Vernacular Final class had an experience with a peanut field last year and raised eighteen maunds of peanuts. Their peanut-booklets which were made in school are very interesting.

Some Educational Values derived from the Garden Experiences.

1. Children have learned honesty and respect for other people's property. When we started the garden work ten or twelve years ago, they frequently dug up each other's peanuts and ate them, or took vegetables from each other's garden. Now this happens very seldom. In the beginning the bungalow garden had to be separated from the school-garden by a cactus hedge, but now there is no fence at all between the two gardens.

2. The children have learned to love and care for growing plants.

3. They have learned something about (a) soils and manures, (b) the watering and care of plants, (c) diseases of plants, (d) injurious insects and birds.

4. They have learned how to utilise bits of waste land for gardening purposes. We have seen this work carried over into the later life of the girls.

Progress toward Objectives.

In carrying on this work we have two main objectives:—

(1) To meet, to some extent, the need for a more practical type of education, and one which is more closely related to the daily life of the Indian girls and women.

(2) To centre education in the child and her daily life. We are endeavouring to do this by enriching the Government Code and by teaching through projects as far as possible under the circumstances. Nothing has been perfected, since we are still in the experimental stage; we fall far short of our ideal, but we feel that some real progress has been made.

Godhra.

MINNIE E. NEWTON.

II

"TOWELS AND TIME"

It is not always easy to know how to introduce projects in the regular mission boarding school, where there is no space to spare, and where it is far easier to follow the line of least resistance and do things as they have always been done than to cause a few upheavals and "mess things up" in the eyes of those who see no sense in these new methods. But Class II, in this particular situation, had a delightful upper verandah on which to work and play. So starting with a firm determination at the beginning not to plan a term's programme beforehand, as has always been the habit of years, we have had the joy of discovering how much simple project work seemed to come, as a very natural necessity.

The starting-point was a box of *Lux* produced by the teacher on the very first day of school. "What is it?" "What is it for?" "Why has Teacher brought it here?" "Is she going to wash the duster?"—were only a few of the torrents of questions that met the little box. Questioning turned to awesome delight when school began and it was discovered that the first item on the day's programme was to stand in line, put out your hand, have a few little white soap flakes tickle your palm and then know that you were allowed to run to the pipe to wash with real soap.

Thus we started off and a problem presented itself at once. Wet hands are not very comfortable, and before the upper verandah was reached many clean little frocks showed signs of having been used as towels; so now it was *teacher's* turn to ask questions! "What have you done to your pretty pink dress?" "What a shame to spoil it so quickly?" "What *shall* we do if

we wash hands this way every morning?" One boy offered the information that if you clapped your hands quickly they would soon dry. A class in calisthenics was his remedy. Another child suggested *one* towel for the group whereupon the advantages and disadvantages of such an arrangement were discussed, and Teacher had her chance for the morning's health talk.

Then came her proposition. There were some pieces of cloth that could be used for towels. If each child had one, the cloth must be cut very carefully and all the towels could not be the same size. There must be no fussing at little differences in size. What must we do so that the towels would be recognized as towels and not appear like old cloths to be thrown away by other people? Who knew how to hem? Where should we keep them? How should we know which was each child's towel? Could they learn to mark? Our work was planned for weeks to come and hemming and marking were never, in my experience, taught with less drudgery.

By the time the precious towels were finished, marked and hung in an impressive row on the verandah railing, other needs had shown themselves. The children who finished first were ready to tackle a new job—making some pencil-boxes; because of the daily disturbance of stopping to put away precious pencils, which otherwise had to be clutched carefully all through game-time, when we wanted every hand and foot free for movement and expression.

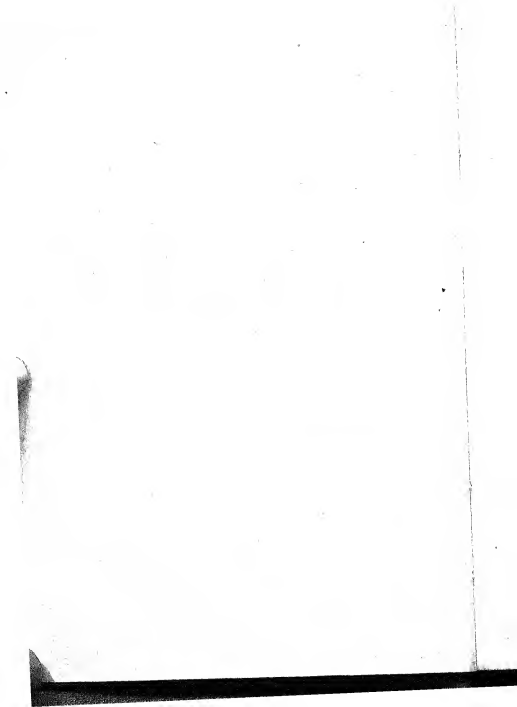
The Reader gave us the next 'urge'. A lesson on 'the Clock' produced interest in how to tell the time, how to make clock-faces, how to learn the Roman numerals, and how to talk about the days of the week and names of the months. Then came the inquiries that Teacher wanted: "Are we going to have a Christmas tree? Can we make candle-holders? Can we make Calendars in the way they did last year?" Calendars were the biggest job; so they must be tackled first, after much practice in learning how to

use rulers and measure squares properly. The names of the months had to be written neatly. Then how should these calendars be decorated? We had been studying trees. They were our friends. Could we make pictures of the trees to put on our calendars? That led to happy expeditions out of doors to draw trees or pretty branches with fruit hanging from them. Christmas drew near and it meant hard work to get such a big task finished in time; but it was done; and never did these little folk understand better the joy of achievement than when they spread their calendars like a carpet around the tree which had been already decorated with the gifts from Class I.

Reading, writing and arithmetic, Nature-work and hand-work were all combined in a purpose to make something beautiful and useful to give to the dear ones at home. The class-room is a joyous place to be in under these circumstances; and teachers and children forget about lessons and live together learning something interesting—and something that (judging by what mothers have reported) can be afterwards carried over into the home.

Madras.

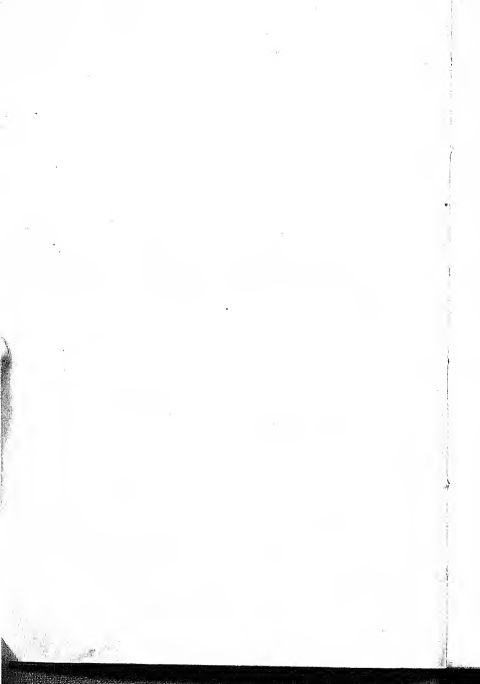
GERTRUDE E. CHANDLER.



PART II

PROJECTS IN SCHOOL LIFE

3. LITTLE SHOPKEEPERS
4. "OUR DAILY BREAD"
5. ENTERTAINING THE PARENTS



III

LITTLE SHOPKEEPERS

THOUGH Arithmetic must be taught as a definite time-table subject, it should not be thought that it is limited to the half-hour or forty-minute-period. It should be co-ordinated as far as possible with other subjects; just as in life it is co-ordinated with every duty and interest of the child. At home, the number that makes up the family, the amount of food they eat, the number of vessels they use, the number of animals or pets kept, things bought or sold, cloths measured or made up into garments, the number of garments possessed by the child, are all types of arithmetical knowledge that are linked to vital interests. In the same way, arithmetic should arise as a natural social inter-relationship between the child and other children; from the work they do, from the situations in which they find themselves, from the things they use. To my mind, the natural relationships of the school-room are just as important media for teaching arithmetic as the set apparatus or lesson: and like the arithmetic arising from the home conditions, 'number' becomes linked through them with the child's actual experience and life.

Thus a child should learn how many are present in the class, how many are boys, how many are girls; or again, to count how many pencils or pieces of chalk are needed to go round. When things are given out in twos, the teacher should let a child help her, and repeat with her the sequence of twos. So with threes or fours. In games the arithmetical relationship should be emphasised. Many games involve number, without being a definite arithmetic lesson. So too in connection with other activities of the class-room. In the Story-period, and in acting

the story, children can understand the number of characters involved. Or in the Nature-period, in drawing a picture, or in making a clay model, they can count the best productions, and subtract them from the total made by the class. In fact, if the teacher thinks it out, number can be taught as effectually from the natural social relations of the class-room as from the set arithmetic lesson.

The Project only improves upon the natural social situation and sets out deliberately to convert it into the medium of instruction. Thus, when we have exhausted the arithmetical possibilities of every-day conditions, by means of the Project we are able to introduce other conditions that are natural to the child, though normally absent in the class-room.

For example, during the first year, a Project undertaken to make a house gives much scope for arithmetic through a more or less 'natural' medium. In making sun-baked bricks, in measuring foundations, in counting the number of bricks needed in each row, arithmetic is essential to the very activity. It arises out of the purpose and the work. The same thing occurs in furnishing and in providing occupants for the house when it is finished; in supplying all the needs of the occupants; clothing, feeding, and entertaining them. A 'play shop' at regular intervals will store the house with necessary provisions. A garden will become another necessary adjunct for its needs. From all this will arise an inexhaustible series of opportunities to teach arithmetic through the activity involved in the situation.

While many people agree that for Kindergarten and First Year work, the Project can introduce 'number' in a natural and interesting way, they are reluctant to admit as much for the work of the higher standards. To begin with, the Government Syllabus demands a definite scheme of work that leaves very little time for project handwork. Moreover, teachers, having only a vague idea of what the Project Method means, may by their experiments reduce a school to a state

sevenfold worse than before. Even good teachers cannot run projects successfully without books, apparatus and sometimes money. What are the conditions of the village schools? If nothing is provided, what are teachers to do? And even more, in the overcrowded bazaar schools? In the Project Method each child should be given a vital part of the work. This means more floor space and more equipment than small Primary Schools generally have at their disposal.

Though ready to recognize all these difficulties, the writer is nevertheless convinced that the Second Year child, at any rate, requires an interesting and purposeful foundation to her study of arithmetic. Arithmetic is the one abstract subject of the school curriculum. Second Year children have not yet attained the faculty of abstract thought. The practical, the purposeful, the interesting, the known can bring the thought home to them in the concrete; but mere abstract statement awakens no visualisation or intelligent response. They may memorise rules and even work them out, but without visualisation they never really understand. The writer has come across 4th and 5th Class children who cannot think round the simplest arithmetic problem,—who divide and multiply without the vaguest idea of what the process means in the concrete; and she has felt the hopelessness of the task of teaching them their own year's work or of working at an erection that has had such imperfect foundation.

She is quite ready to admit that the first essential in working the Project Method is 'common-sense'. One must plan one's project with a view to the large class, the lack of equipment, the none-too-efficient teacher. Yet when one has scrapped most of the impossible propositions that books on the Project Method bring forward (impossible at any rate for the conditions of Primary Schools), one can in a simple unambitious way still bring interest and activity into the Second Year work. By the Second Year is also

meant the Third, if the two classes are run together; the work of the two years to a large extent coincides. The same situation can often be used to illustrate a simple problem in arithmetic and also a more difficult one. Even where the classes are distinct, the project described below for the Second Year can be adapted equally well for the Third.

A SECOND YEAR SHOP PROJECT.

This Project will enable the teacher to fulfil the Government requirement for the year's work, which includes (1) a knowledge of notation and numeration of numbers over 100; (2) Addition and subtraction of these higher numbers; (3) Multiplication tables between 11-16; (4) The fractional tables $1\frac{1}{2}$, $1\frac{1}{4}$, $1\frac{3}{4}$. Multiplication and division with multiplier and divisor of two figures; (5) Addition and subtraction of money and weights; (6) Knowledge of the clock.

Introducing the Shop Project.

It would be difficult, and somewhat unnecessary, in the case of town children, to take a large class to visit a shop; but with a small country class the teacher might do so. For the town children the teacher could suggest as a home task, that each child should visit a shop that is a favourite, and then go back and write from memory about everything that interested her, or everything that she noticed. This will be a kind of "Kim's Game" that the children will enjoy. Their summaries can be written up neatly in their arithmetic books under a heading, such as "Mahasukh's Cloth Shop", or "Ram Singh's Toy Shop". These summaries will prove of use to the teacher later in planning work; for through them she will get an insight into the kind of things that appeal to the minds of different children.

The Teacher can now set to work to develop any knowledge of money that the class already possesses. She could refer to the list of things appreciated and could ask what the children are in the habit of buying.

She could then tell them that some of the things cost much more than the amounts they usually handle, and that she was going to teach them what those higher amounts were. After she has shown the coins, the class can sit round in a circle on the floor and the teacher can play "Bank" with them. That is, she calls up different children in turn, and gives them a coin, telling them to take the same amount in other coins. Having changed the money, the child gives it all back and returns to her place, while another child comes to the bank. After further practice, a child can play the part of banker.

Children can gain more practice in learning the value of coins by making value cards for themselves. For example, having cut out a silver paper outline of (e.g.) a two-anna piece, the child can stick it to a card and write underneath "2 annas can be changed into 1 anna and 4 pice",* etc.

A need for the revision of multiplication tables learnt during the First Year, as well as for mastering new tables, will arise out of conversation about other children's favourite purchases. Having drawn a sketch of the object, the teacher can ask, "Supposing we buy a quantity of balls, how can we tell the price quickly? She might then draw the ball and write the price in the multiplication sequence.

1	ball	costs	9	pice
2	balls	cost	18	"
3	"	"	27	"
4	"	"	36	"
5	"	"	45	" etc.

Drill in both multiplication and division can follow. "One ball costs 9 pice, how much will 6 balls cost? You can get 8 balls for 72 pice, how much will one cost?" A blackboard shop, in which an object is sketched on the board, and the price written underneath, will bring a variety of practice in the four rules.

* Mrs. Nightingale, in *Practical Individual Work*, gives an illustration of this type of card. Children could of course equally well stick their coins in their note books.

In the course of teaching multiplication in the way described, the teacher will be able to point out to the children that if they can count only up to 100, they are very limited in their calculations. Supposing a toy motor at 11 annas has been chosen to motivate the '11 times' tables (at this stage converting annas into rupees is not attempted) 11×10 will introduce a number not yet learnt. Counting from 100 to 1,000 will now arise as subsidiary to the Project work. The clearest way to teach 100-1,000 is to set the children to work with rulers, pencils and paper, and taking $\frac{1}{2}$ inch as the unit, to make the 100 square. The work of ten children can then be chosen and mounted on a large sheet of paper to make 1,000 squares. The Montessori apparatus for teaching 1,000 should also be used if possible. This consists of the 10 hundred-bead chains.

When the children have got some concrete idea of what a thousand means in relationship to one, the teacher can let them take as their unit a step, and for home work, measure how many steps there are from their homes to the shop, or from the shop to the school. Slate-work can be given in connection with the results obtained. "How much further does Munia live from the shop than Sita?" If Munia's, Sita's, Sarsatti's and Rama's steps are added together, how many will there be? Addition and subtraction of the larger quantities will not be learnt in one day, but the work can be motivated thus by the children's activity and experience. Textbook work can be chosen to fit in with all such activity. Opening a 2nd year manual at random, I find the question, "In a district there are 3,003 Hindus, 215 Muhammadans, 108 Christians; how many people are there altogether?" It is obvious that when the children set out to measure a bazaar street, not only the number of paces resulting can be added up, but for further practice, the number of people of different castes living on either side of the street, can be included, to say nothing of other problems relating to the bazaar that can be adapted from the text-book.

For more practice, such as counting, adding, multiplying numbers beyond 100, a sweet-stall will provide interest. Sweets give a rapid turnover and at the same time provide very profitable arithmetic! In our local bazaar an attractive sweet-vendor, with tin and tray, visits the boys' schools daily, singing an invitation to buy and an ode to the excellence of his wares. Such a climax promised for some future date, will lend untold zest to the task of counting and pricing sweets, or (in the initial stages) stones. If the sweet-stall proves a success, the children might be encouraged to save their pice and thus assist in stocking a toy stall, or utility stall, whichever is preferred. A Savings Department could be started in the class, the teacher actually keeping the money, but the children themselves entering their contributions in a book. Some knowledge could now be given of how to write Indian coinage. In writing up the book a separate page should be given for the contribution of each child. She can add to the amount from time to time.

While money is accumulating, there is much to be done to prepare for the shop. The teacher can appoint a few children to make enquiries from a local shop-keeper regarding his method of buying his stock. Many of the children in the bazaar will undoubtedly belong to some of the shops. These would be most suitable to appoint. They would finally report on the result of their enquiry. The class can then play at stocking a shop like one that has been described. The children can prepare orders from a big wholesale firm and calculate how much they will have to pay. They can also work out railway and motor freight. Finally they can write their orders in their books. The Manual will again guide the teacher in preparing questions to be worked out. In connection with teaching multiplication and division of numbers with multiplier and diviser of two or more figures, several questions are given that, with a little skill, can be adapted to the Project-work.

The teacher should remind the class from time to time of the need at some future time of choosing their own stock. She can let the children prepare catalogues from which they can study prices and plan orders. By cutting up old catalogues and pasting the pictures into books, they can get an idea of the type of goods a big Calcutta shop stocks. They should be told correct prices and should write them under the pictures. If each child prepares her own "catalogue", she can make many shopping lists from it and buy according to her pleasure. By imagining that she possesses a definite number of rupees, her choice will require more deliberation.

At this time lessons in writing, in adding and subtracting money, will require careful attention. A class play-shop, in which various goods are priced and sold, using cardboard coins for money, will give practice in rapid calculation. In the absence of stamped coins, paper of correct colour cut the right size and form, will answer the purpose. Given a pattern the children can prepare the paper themselves.

Weighing and measuring will require to be learnt before the children's shop can be successfully started. The teacher should procure scales and weights, and as she explains the different values, let the children come forward in turn and weigh sand or pebbles. They can then plan what weighed goods would be most likely to sell in their own shop. Sugar is often in demand among children. 'But' in its season can be weighed and sold. The quantities needed for stock will have to be worked out and prices calculated. Small retail quantities will also have to be calculated with speed and accuracy.

Though the yard-measure does not actually come into the Second Year syllabus, children will be ready to learn about it, on account of the need for it that will arise in connection with their own shop. Hair-tape is a cheap and saleable article to stock in a girls' school. Much practice will be required beforehand

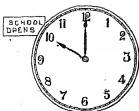
in order to make the children expert in measuring and pricing different lengths.

The children who have entered most keenly into the year's work, and who have done best, should be chosen to go with the teacher to buy the stock—if it is finally bought locally; or if the stock is ordered by post, they should be allotted the task of writing and posting the orders. Goods bought should be submitted to the class and the prices written in all the notebooks. Stall-holders should be chosen and different articles allowed to them. Each should have a sale book, distinct from the main Project Book. This can be drawn up (*e.g.*) as follows:—

CHILD'S SHOP NOTEBOOK.

Total Goods	Full cost	Cost of 1	Number sold	Money received	Goods over
6 doz. safety pins	Rs. A. P. 0 6 0	0 1 0 per doz.	36	0 3 0	3 doz.
40 balls of thread	0 10 0	0 0 3 Each	25	0 6 3	15
Etc.					

One thing more remains to be done before the shop can be opened. The 'Public'—*i.e.*, children in other classes and children's parents and friends—must be informed about it. Dates and time must be fixed. The children can learn incidentally something about the months of the year and calendar dates. The school time-table can also be discussed, and work assigned for each hour labelled, on clock-faces drawn on the blackboard and in the books, as follows:—



Separate clocks for each period can be drawn, or cut out of catalogues. The time-tables of other classes can be discussed, and the most convenient time for holding the shop settled, with reference to these classes also. While the clock-face is being learnt, the teacher can introduce problems relating to time. Henceforward the shop could be opened for business for a fixed period about once in three weeks. After the sale, the accounts should be carefully made up and audited, the stock counted and compared with the quantities sold. The total amount made should be reinvested in fresh stock and the list of new goods, as well as what remains of the first lot of goods, rewritten on a fresh page, together with their money value. On the day of the actual sale, each seller should have a book-keeper at hand to jot down every article as it is sold. When the teacher finally decides to shut down the shop, the total profits should be calculated, and when the children's money is refunded, all such profits should be divided equally among them. However, it is wiser to aim at selling without profit. The interest in the work itself should be sufficient motive for the shop.

In conclusion, it should be said that this Project does not limit the teaching of arithmetic to the activities here described. Much slate-work and drill work is also required. But most of the drudgery of such mechanical tasks vanishes through the meaning and the interest that the Project brings to them.

Hazaribagh.

B. FERGUSON.

IV

"OUR DAILY BREAD"

WHEN the Sherman High School moved from a crowded hostel into spacious new buildings, built on the cottage-plan, the problems that confronted us were numerous. We could not cope with them all at once. The girls were frightened at having so much space, and sleeping in small separated groups, and they resented being torn from their friends in other cottages. All were rudely shaken out of the accustomed routine into something new and unfamiliar. We were quite at a loss as to how to set in motion the plans we had dreamed of so long for training the girls in house-keeping. For two or three weeks we continued the old way of cooking and serving food in one central place, until the "Opening" was over, and classes began to settle down to work. But still the cottage kitchens remained locked, their new aluminium utensils untouched, while family spirit was at a low ebb in every house. Something had to be done about it.

Three Sixth Form girls were taking Domestic Science as an optional subject and had completed in the previous year an elementary study of the principles of nutrition. Their help was invoked in getting the cottage housekeeping started. Fortunately they represented the three cottages which were at that time completed and occupied.

Some of the problems discussed were the following:—(1) According to the diet now given, what food-stuffs, and how much of each, will each cottage need each week? (2) Do we want to continue the diet now given, or shall we change it? (3) How much money will each cottage need each week?

The second problem was the one first attacked. Work along this line, which had begun in the previous

year, was reviewed and completed. One girl's portion of every kind of food eaten during the day was brought in its raw state into the Chemistry laboratory and weighed in the balances, so as to get the exact weight in *grāms*. One girl computed the approximate number of *grāms* of protein eaten per girl per day and compared the result with the requirements as stated in the text-book. The others did the same with fat and certain minerals. We were hindered from doing accurate work by the lack of data on the composition of certain Indian foods, but we gained a general idea of the 'lacks' in the school diet. We checked each other's calculations and pondered long and seriously over the discrepancies between the "requirements for growing children" as stated in print, and the actual amounts being eaten by growing children each day. There was too little protein and too little fat and we suspected too little calcium and iron, but could not confirm our suspicions. Before this problem could be solved, we were obliged to "count the cost".

The girls next visited the bazaar with the Matron and wrote down the current prices of every foodstuff. The Matron was invited to the class to help work out how much of the right diet could be given for not more than the sum at that time being spent on food, —since our move to new buildings did not bring us any increase in appropriation from the Mission. We finally settled upon a rupee and two annas per week per girl, as a rate on which to begin. The three girls were appointed house-keepers of their respective cottages for the first month, and instructed to draw money at this rate from the Principal the following Saturday morning.

The next difficulty was to know how much rice, how much *rāgi*, and what quantity of each of the curry-stuffs and other ingredients each house-keeper would need to buy when she went to the Matron's "shop" on Saturday morning. We had to come to a decision about the diet and planned a few conservative changes to begin with. There must be more of

oil and cocoanut each day and the "lunch" given during morning recess should consist of cheap protein foods such as roasted peanuts, Bengal *grām*, and dried peas. From the previous estimate of each girl's portion, and from the amount being given to a hundred girls at the time, a rough estimate was made for each house. The problem of how to store the week's supply arose; whereupon a carpenter was hastily summoned to make a typical Indian "store-box" with compartments for rice and each separate curry-stuff to stand in each cottage store-room.

Saturday morning came at last. The three house-keepers with new, long account books in hand, received about twenty-seven rupees each, and hastened over to the "shop" where the Matron had accumulated quite a stock of staple supplies. It took hours to weigh and measure the right quantities that first day. The inexperienced "cooking-squads" were confused at working with utensils so much smaller than any used in school and yet larger than those used at home. The distracted house-keepers stood over them dictating quantities. Meals were late and poorly cooked; but the members of each cottage sat down to eat as a family. Interest grew and scepticism decreased. The girls looked on with awe at those of their own number who had money in their hands, who sent the servant to bazaar for vegetables, and kept the store-room key; and they voiced their criticisms loudly!

Class periods in Domestic Science were taken up with all sorts of problems which had not been thought of before,—how much firewood to buy at a time, how much to allow for the preparation of a meal, how to save kerosene oil, how much cocoanut oil and soap-nuts to buy, how to keep the kitchen clean. The house-keepers worked over their accounts to the neglect of their lessons, but came out at the end of the week with a credit balance which they were allowed to carry forward.

Each successive week became easier. The cottage members began to take pride in cooking in their own

little kitchens, in comparing their food with that of other cottages, and in suggesting new departures. A wider variety of vegetables was possible, when buying for only twenty-five. Preparations which had taken too much time to cook for a large number became feasible for the smaller group. The Domestic Science class now spent its periods in one of the kitchens experimenting with different varieties of "morning food", using other grains than rice. These were tried in the cottages until they won the approval of all but the most conservative eaters.

Long after the class had to turn its attention from dietetics to the next item on the prescribed syllabus, this Project went on. The girls soon grew accustomed to their responsibility. They waved their bank notes at the penniless and plotted imaginary embezzlements; for to a girl of sixteen who has seen very little money in her life, twenty-seven or thirty rupees in hand is quite a responsibility. They saved up their credit balances and invited their cottages to hold feasts where they entertained their chosen guests with all the grace of Indian hospitality. They did, of course, spend too rashly some weeks and run into debt, in the effort to be popular with the house; and had to come down to the "cheap but nourishing" essentials till the debt was cleared. On one such occasion, in one house, the girls became rebellious at repeated doses of *rāgi-conji*, the cheapest and least liked of all morning foods. One morning when they assembled in front of their smoking plates of *conji*, they refused to sing the blessing. The house-keeper, who happened, in that house, to be also the "Queen", sang as a solo the usual song, "Lord, we thank thee for this good food". "Why didn't you sing?" she demanded angrily, in place of an "Amen". "Do you call this *good food*?" was the reply!

But after five or six weeks, the difficulties were for the most part surmounted, and the new routine was established. Each of the original three house-keepers handed over the reins of her house to another big

girl and reverted to her part in the regular cycle of domestic work. The new house-keepers had a good precedent to follow, although they too had to learn by their own mistakes. In the five years since, scores of girls have served their month, sometimes two months, each year; but it was that Domestic Science class which 'blazed the trail'. Although buying is now done directly from the merchants, the system is very largely the same.

Last year another Domestic Science class helped their teacher, who is Chairman of a "Diet and Health Committee" for her Mission, to analyse and criticize the diets of all the Mission boarding schools. Their findings were the basis on which the Committee based its decisions. They also helped to prepare the charts for vernacular pamphlets on the subject of diet,—such as "How to plan a balanced diet", which involved much weighing and changing of *grāms* into common measures.

In judging the gains acquired through this continuous project in cottage housekeeping, we may mention the following:—

- (1) An elementary knowledge of how to apply the science of nutrition to the feeding of a family;
- (2) Practice in making a budget and managing within that given amount;
- (3) Practice in keeping account of every pie of expenditure;
- (4) A determination to avoid debt and to pay off debts when incurred;
- (5) A sense of responsibility for the welfare of the cottage;
- (6) Honesty in the midst of abundant temptation to 'embezzle';
- (7) Ability to do one's duty in the face of criticism.
- (8) An intelligent interest in the expenditure of one's own family during the vocations.

Chittoor.

CHARLOTTE C. WYCKOFF.

V

ENTERTAINING THE PARENTS

THIS Project was carried through in St. Paul's Lower Primary Boys' School, Ranchi. There were about one hundred and eighty boys in the school, all but about thirty being Christians. They varied in age from babes of four or five in Class I, to big boys of fourteen in Class IV. The Lower Primary had been accustomed to have its Prize-giving with that of the High School; but as we began to realize ourselves as "a school", and not merely as the lower division of the High School, the desire arose for a prize-day "all our own"; and so we decided to give an entertainment to parents and friends to be followed by the distribution of prizes.

The top class was entrusted with the planning of the programme, organization, etc.; and the members of this class also understood to act the Parable of the Woman and the Lost Piece of Silver, which was one of those which they had just learnt in their Scripture course.

Planning the Programme.

A deputation from Class IV first visited the other classes in turn, and asked them each to be responsible for one item of the programme. The youngest class of all decided on a reading lesson, the biggest boy in the class acting as teacher; the next class promised an action song; whilst other classes said they would give short dramatisations of stories from their class readers. In this way the programme was tentatively fixed and the day, hour and place chosen. Then the whole school set to work to "carry out their aim according to plan". Although the whole school took part in this Project, the main work and responsibility fell upon Class IV. There were about thirty boys in this class and their ages varied from

ten to twelve, with one or two big slow boys of fourteen. The master was an enthusiast, quick to "catch on" to new ideas, and with a considerable amount of initiative and an unlimited capacity for hard work.

The Play.

The first thing to be tackled was the play of the Lost Piece of Silver. We read this in St. Luke XV, and then proceeded to visualise the story as it might have happened. At first the boys were very slow with suggestions, but gradually they improved and used their imaginations more freely. Little by little we divided the story into Scenes, which we wrote up on the blackboard.

Scene I showed Bazaar-day, and the sorrow and envy of the poor woman as she watched the more fortunate women wearing their gay necklaces and bangles while she had none—not even beads.

Scene II showed the woman at home, counting over her poor little store of pice, and thinking, thinking as to how she could save enough money to buy a necklace, so as not to feel shamed when she went to the bazaar. At last she determines to do her shopping very carefully and so save a few pice each week until she has the necessary amount.

Scene III was another bazaar-day, when the woman, having saved sixteen annas, goes to the money-changers and exchanges them for the first coin for her necklace.

In the Fourth Scene we see the woman joyously opening her secret treasure and counting out her precious rupees—"One, two, three.... nine, ten!" Then tying them up carefully in the corner of her sari, she takes up her basket, locks the door and goes off to the silversmith. Next we see her receiving the necklace from the silversmith's hands and walking proudly through the bazaar.

Scene V.—The loss of one of the precious coins, the frantic search, and the joy of recovery follow. And finally the call to friends and neighbours to rejoice, "for I have found the piece that was lost!"

The names of the scenes and short notes on each were written out by the class, but the dialogue was evolved by the actors as the rehearsals proceeded. Next the actors for each part had to be chosen, and the names of these also were carefully written out.

The Setting.

Then we enquired *why* our Lord spoke this and the two other parables in this chapter, and decided that if our play were really to bring out the lesson of God's great love for the sinner, we must show the "setting" in which the parable was first spoken. It was therefore arranged that the best reader in the class should read St. Luke XV, verses 1 to 3 before the Play began, and verse 10 at the end, whilst the neighbours would be still rejoicing with their friend over the recovery of the coin.

Making of Properties.

'Properties' had to be made—the ten pieces of silver, the cord necklace to which to fasten them, the silver-smith's tool box, hammer, etc. Other properties for the bazaar scenes; and the *chulha*, broom, lamp and other things needed for the house were gathered from various sources.

During rehearsals I found some difficulty in restraining the boys during the bazaar scenes. They were most realistic; and the danger was that in the excitement of impersonating a really rowdy bazaar crowd, the aim of our play would be altogether forgotten.

Invitations.

With the Play "blocked out" and rehearsals under way, Class IV turned its attention to the writing of the invitations. The form was drawn up in class and written on the blackboard, after which many writing periods were spent in copying it. All copies had to be passed by master and boys, and it was most interesting to see the improvement in writing and neatness as the days went by. When we had about

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sixty or seventy invitations ready, we set to work to make the envelopes—this again requiring considerable neatness and accuracy.

Posters.

As the day drew near, we began to think about programmes for our guests. The items were finally fixed and a good number of programmes were written out. Next, our ambition growing with success, we determined to make posters to announce our entertainment. We made three of these, about foolscap size, of brown paper, with a drawing of "the Woman searching for her Lost Coin" cut out in white paper and pasted on. The wording of the posters was in one-inch letters.

The preparation of these posters was quite a big project in itself. We had several drawing lessons "from life", one of the boys dressed in a sari acting as model. We drew the woman on slates, on black boards and on paper, and then the three best artists were entrusted with the work of illustrating the posters. The final result was quite effective.

The Day.

At last all was ready and the great day arrived. We borrowed stage and curtains from the Girls' School and everyone worked with a will in making the final arrangements. A large number of visitors came, including many mothers and, to our great satisfaction, a few shy fathers! Boy stewards, wearing badges, were deputed to welcome our guests and show them to their seats, and others to distribute programmes. The entertainment was really a great success; though—as each class contributed—it erred on the side of length. The children showed a tendency to speak too rapidly when excited, but on the whole they kept their heads and acted well. When entertainment, prize-giving and the reading of the report of the year's work were over, the visitors were shown over the class-rooms, whilst the teachers were at hand to

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explain the various models, house-projects and pictures which were on view. That was the end of the Project, so far as the audience was concerned, but there was still much for the boys to do. Cleaning-up was done thoroughly, borrowed properties returned with thanks, school properties put away for further use.

The Project Book.

Then Class IV proceeded to make a most attractive record of their entertainment in book form. This gave much scope for the exercise of neatness, good writing, composition and drawing. It constituted an excellent form of revision too, had such been needed. The book was of foolscap paper, bound in a stiff blue cover, with gay red corners, and bore the poster picture. Inside was a copy of the invitation, an envelope and a programme. Then came the programme in detail. The poems for recitation were written out in full. The stories of the various short plays were also written, with coloured illustrations on the opposite page. Last of all came a delightful drawing of the Beginners' Reading Lesson, with a cleverly drawn easel and blackboard, and on the latter was the first stanza of the Little Red Hen story and in front a most realistic group of pupils!

The making of the book was a very valuable part of the project and for a long time it was shown to visitors with great pride. Incidentally, I might mention that when I went on furlough I took it with me, and it proved a never-failing source of interest to people in England.

Results.

So much for the Project. Now what about results?

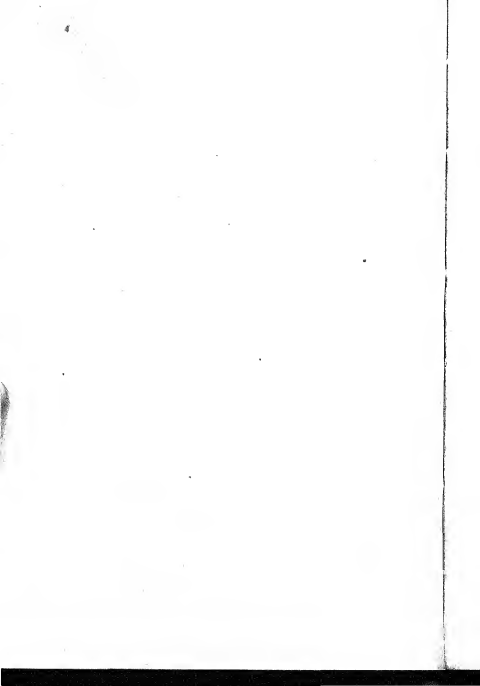
- (1) I think we may claim to have succeeded in our aim to entertain our parents and friends; and in so doing we managed also to entertain ourselves for about six weeks of the school term!

- (2) Teacher and class certainly got some idea of how much may lie hidden in a few verses of the Bible if we will but ponder over them and use our imaginations.
- (3) A great impetus was given to the boys to improve themselves in reading aloud, writing and drawing. The improvement in all the subjects was most marked. The writing in the Project Book was really beautiful, astonishingly so for lower primary boys.

Again, I hope that the lesson of the 'Lost Coin' has become part of the boys' very souls, and that perhaps some day, when one of them is feeling alone and despairing, having lost the Way, the thought of that school-play may come back to him, and then his thoughts may turn to the boy-reader at the end, saying "likewise there is joy in the presence of the angels of God over one sinner that repenteth". But we shall never know whether we achieve that aim or not.

Ranchi.

DOROTHY HARRIS.



PART III

ENTERPRISES IN COMMUNITY LIFE

6. AN EXPERIMENT IN TRADE
7. A STUDY OF COMMERCE
8. A COMMUNITY LIFE EXHIBIT
9. HOME LIFE IN BENGAL AND CHINA
10. "JUNGLE-WEEK"
11. SERVICE TO THE SICK



VI

AN EXPERIMENT IN TRADE

PROJECTS are newer things for boys of High School age in India than for boys of Primary age. It is a more difficult task to introduce this idea among the larger boys, and to those responsible for getting them through the public examinations. The Project described below was begun in the hostel which serves as a residence for the Christian boys who attend the Farrukhabad Christian High School and the Barhpur Primary School in Fatehgarh. At that time the work of the school was still being carried out on practically the traditional lines. The boys studied set subjects, and their results were judged altogether by the traditional type of examinations. The teachers were studying the ideas underlying the Project Method and were interested in it, and the study was beginning to bear some fruit in less formality in the school work; but the High School was not (and is not yet) very hospitable to the Project idea.

Nevertheless it was quite easy to have the boys learning by Projects. They were eager to do things, and a little encouragement was all that was needed to keep them working on extra-curricular projects of their own. The High School masters encouraged them in some of these, and the Warden of the hostel encouraged them in others. The arrangements the hostel boys made for matches, the wrestling tournament they staged, the dramas they enjoyed preparing, their garden and the "Christian Sentries Club" run entirely by boys with the minimum of interference from their elders, were systematic enough to be learning experiences. So also were the High School paper (*The Student Herald*) and the High School clubs. These could all truly be called 'projects', but the masters called them

"enterprises" or "undertakings", without using the magic word of modern education.

But the Project in the Christian Boys' Boarding House which made the most impression on the boys was the Hostel Shop which was held in 1927 during the meeting of the Joint Evangelistic Committee of the North India (American Presbyterian, Missions. These meetings brought a large number of leaders, both Indian and foreign, to the station. The sessions were held on the school compound, and so the customers were brought to the very doors of the school.

The year before, some of the boys had carried on two little shops during a similar meeting of the committee; and the Project we here describe was an effort by the boys assisted by their Warden and the missionary-in-charge to improve on that shop.

We were ready to encourage the boys to do anything that would render them more familiar with buying and selling, as we felt that this was one of the fields which was more open to Christian young men than almost any other. The castes, functioning to-day in modern India almost as the guilds did in mediæval Europe, monopolize many of the occupations to such an extent that the advent of Christians to share their prosperity is resented, and boys are likely to have a hard time in competition with a whole "brotherhood". The non-Christian public however will welcome an unmistakable bargain, even when a Christian offers it! But buying and selling require experience, and boys are timid in beginning things which are utterly unfamiliar to them. So we believed this project would supply a useful means of opening this possibility to them.

We had succeeded before in giving the boys more experience in buying than a boarding school can usually supply; for they used to go to the shop by turns and buy food for the whole hostel, giving account to the Warden of the money spent. This hostel is classified by the North India Mission as a "Boarding School of the Second Class"; which means that the boys are usually not required to pay more than a

nominal fee. Some are orphans and pay none at all. To many, clothing and bedding are supplied, but on a very simple scale. The food, too, is of the simplest, planned to give the highest possible health efficiency with the lowest possible cost. The boys do their own cooking, cleaning, much of their mending, and as much other work as they can.

Such boys as these are apt to have more limited ambitions than boys who come from more comfortable families and surroundings. A small amount of pocket money makes one of these boys, in his small community, the equivalent of a very wealthy man. So we could not count on ambition carrying these boys very far in difficult projects, even when it was for more money. They could not see the need for saving. They saw that the Mission was paying for their education; they expected that the Mission would provide additional years of schooling when they failed in their examinations; and that the Mission was to start them out in life. Money was not to be *used*—the Mission provided for necessities and the boys saw little of that money—but money they got was for squandering, and a little went a long way. Yet the boys did have the desire to earn a little pocket-money. They were willing to start a task that did not promise to be too demanding if a little money were to be had.

The beginning that had been made the year before had not been very satisfactory. A group of boys had been picked out and encouraged to get and display a few oranges. But some of the other boys opened a stall in opposition to them and did several things that were not good business. Among other things they managed to find that begging was more profitable than selling. A sympathetic missionary was too ready to let a boy keep the change. It was not much for him, but it showed the boy that a display of poverty would 'net' more in a few minutes than hard work and service would earn in several days. The opposition-shop took advantage of the work already done

by the original shop, much as the American Jew in the story who filled his shop with customers by merely hanging out a sign "Main Entrance" when both of his neighbours were advertising special sales!

This year we did not want to run the risk of repeating any of that history; so the Warden talked to the boys and gave them a general idea of business and business-like ways of doing things. One of the boys in writing about it later said: "Our minds were stirred by the description of trade." These eight boys were prepared, when we had the first conference, to consider the actual opening of the shop for business. They talked over the whole situation. They asked some questions and when they forgot to bring up some essentials, we asked them questions. The first important problem was how to advertise. Missionaries from all the stations in the North India Mission, preachers from the districts round about, influential Christians of the North India United Church, and other equally desirable customers would be gathered together. The boys might have liked to have an official announcement made in the meeting that they had oranges for sale, appealing to the interest that the Evangelistic Committee has in this educational work. It probably could have been arranged for, had it been desirable. But the boys were convinced when this was suggested that it would be better to conduct the business as any business man would, not asking for any special favours. So they decided to prepare a notice and circulate it to the members of the committee as they arrived. One of the boys prepared the notice and the manager let them have a piece of stencil and supplies for duplicating at cost-price. A boy ran the machine and did the printing, and other boys gave out the circulars.

Now what should they sell? This neighbourhood is one of the centres of the 'Sylhet orange' cultivation in this part of the country. This fruit keeps very well, and is much in demand in the homes of those who were gathered together. There are some other

products, like printed curtains and so forth, made here, which visitors often wish to buy. One of the missionary families in the station had bought a case of American soap-flakes, and offered a commission to the boys if they would sell the surplus of these boxes of soap. So the boys decided to handle these things too. To help in the advertising some of the boys prepared a sign-board to put in front of the shop; but an unfortunate mistake made it read 'sluts' instead of 'syllhets'! However it served the purpose as it was, until it was discovered by the manager and corrected.

Another problem was that of capital. The boys thought they could solve it immediately by simply asking the Mission to advance the money. We explained that this could not be done in ordinary business anywhere. Besides, some of these boys had refused to co-operate with the institution the year before and had forfeited their right to get money at low rates. So we offered them money at the current market rate, one anna per month on the rupee. That looked too high for them, so we gave them permission to try elsewhere and see whether or not boys who could not give any guarantee of payment could get money for a lower rate. By the time they had discussed it and tried other plans they were convinced that high interest rates are a thing to be reckoned with when you have small capital for business.

The meeting was held during a school vacation, so there were not very many boys engaged in the project. The bigger boys were busy in the affairs of buying and selling, hunting up orange-groves, and so forth, and they wanted the smaller boys to help in arranging the tables and furniture for the shop. There had been a tradition in the school which made the little boys serve the big ones. Though we had begun to substitute the idea that big boys should help smaller boys, old ideas still held sway, and the smaller boys would have unquestioningly acted as 'fags' for the big boys. But we insisted that those who shared in

the labour must also share in the profits; and the older boys were then willing to give something to those who helped carry chairs and other things.

We also explained to the boys that a business man has to reckon with rent. He cannot go into a crowded market place and set himself up without paying for the privilege. He must either rent a shop or buy the privilege of peddling. So we charged the boys a small sum for the right to maintain the shop on the school compound, and this sum was to go to the Games Fund of the hostel, to which boys' earnings are often applied.

They enjoyed that shop. They used a cart and went to the groves to buy oranges at the lowest possible prices. They sold them over the counter by the dozen and took orders for later delivery by the hundred. Mr. Hezlep, one of the members of the committee interested in village economic improvement, brought a quantity of *jharans* which had been woven by the Christian weavers of Ranipur. When he found this shop in full swing, he turned over the business of selling them to the boys, and gave them a commission on their sales. Each day the business increased, until the last day, when it rained. They hurried their wares into shelter. "We all were wetted!" was the climax of the boys' account of the enterprise.

The sale of oranges continued after the meeting. Every now and then some one would write in for a hundred oranges. The boys would pack and send them off and the proceeds were added to the profits of the original venture. But the accounts were made up at the end of the committee meeting. It was found that they had earned enough for a small profit in addition to the amounts paid for interest, rent for the "concession" and help.

The outcomes of the Project were of three general kinds: (1) A slight advance was made by these boys in familiarity with certain things they had already supposedly "learned" in school; (2) they developed the ability to do some simple things necessary in carrying on business; and (3) they increased the develop-

ment of certain character traits which they needed and which are not provided for in the usual school life of boys.

(a) The Project increased their knowledge of Geography, as well as of local products and so forth, and taught them how to draw on that knowledge to decide what they wished to sell. The smaller boys associated with them also had this knowledge impressed upon them. They compared this city with others and knew its characteristic products. They had learned in Geography that Sylhet is the source of this well-known kind of oranges, but now they learned the connection between these two words in this Project.

(b) It also helped to improve their Arithmetic. The common procedure which these boys had been used to follow in arithmetic was something like this: They would reduce a new kind of problem to a formula, which they called "the rule". When they read a problem in a book or an examination paper the first thing is to try to recall the rule for this sort of example. Then they would distribute the figures given in the blanks of the formula, working it out and redistributing the figures until the answer agreed with the one given in the book or the one which they learnt from other boys! But now, although the arithmetic involved in the Project was very elementary, still it was not subject to that sort of treatment. It was real arithmetic.

(c) They got some practice in the use of English. The papers for shipment had to be filled out in English. Many of the customers preferred to talk in English rather than the vernacular. The conferences held to organise the shop were in the vernacular, but English was freely used where it would be understood. The accounts were kept in English, and the advertising was in English.

(d) This work also served as a method of exploration of buying and selling, so that the boys could find out whether they would enjoy this sort of work or had an aptitude for it. It made them familiar with a number of things which are learned by boys in their own

families, but which are apt to escape orphans and boarding-school boys.

(e) By far the most important outcomes of the Project were those which are more general. Practice in co-operation; experience in relating plans to definite desired outcomes; experience in carrying out things which were unpleasant, but were persevered in, to gain an ultimate goal; the value of honest business methods—all these are of the utmost value and cannot be put into a formal curriculum. There seemed to be an increase in self-confidence as a result of this and other similar Projects in the hostel.

(f) This Project has had its influence in changing some of the conditions noted above. We can see an increase in ambition in the boys. They want to have better clothing, want to wear shoes, and want to put some money away for future use. They are more willing to work for the future, and some of them have Post Office Savings Bank accounts, though there has been no movement in the school especially to promote this.

(g) Another important result is the proof that High School boys, engrossed as they usually are in the task of amassing the words which will pass for information in that all-eclipsing examination, can work in Projects and derive benefit therefrom. Teachers who identify diligence with time spent over a book will still object to boys spending their time out of school in activities founded on their own purposes; but most teachers can see the benefits of this kind of activity. And as it becomes more successful they will be more in sympathy with it.

How can the Project Method be Improved?

1. More leadership from the High School staff would have made the Project richer in its details and would have co-ordinated it more with the everyday practical work of the high school classes. Without any interference, a few helpful suggestions might have opened more of the resources of the institution for the boys.

2. This Project was a little too elementary for the older boys. They could handle heavy loads better when large quantities were being shipped, but most of the work could have been done by smaller boys, and it would have been more of a challenge to them.

3. This Project is better adapted to a High School with a boarding department attached than it is to a hostel detached from the High School, and serving one or two other institutions at the same time, as this one does.

4. The time was not ideal. The boys indeed had plenty of time, for their regular school work was suspended; but the teachers were busy with the arrangements necessary for entertaining the members of the Committee, and so they could not devote as much time to the boys as was needed.

Fatehgarkh.

RALPH D. CORNUELLE.



VII

A STUDY OF COMMERCE

(TRADE AND TRANSPORTATION)

"THE Town of Ongole", particularly its trade and transportation, was the community life (or geography) subject for the Third Standard during the past year. The following is the way in which a part of that subject was undertaken:—

The Third Standard took a trip to the bazaar soon after school re-opened in July. They wanted to make a miniature bazaar; and they went down to observe and to take notes concerning what would be needed.

There was a large mud platform, used to serve the purpose of a sandboard, in their school-room, which they themselves had built; and on it they planned to lay out their bazaar in imitation of the big one in the town. Laying out a proper bazaar, however, called for some skill, and gave the opportunity for some valuable first lessons in map-making. Directions had to be determined, and relationships of one shop to another and to various roads and landmarks of the town. Comparative distances, allowance for streets, the amount of space to be allotted to each shop and to each kind of shop, had to be worked out. It was decided that there would be room for only one shop of each of the principal kinds on the bazaar street. Foot-rulers or scales were in demand, and yard-measures too. The floor made a fine place for working out the first large plan, while lesser ones to scale could be worked out on the blackboard by each child and later carefully drawn in the project note book.

The sticky clay of the locality furnished good material for building the shops, for indicating the hills on the outskirts of the town, the little Mohammedan

shrine on the bazaar street, and the walls of the school and Church-compound farther along on the same road. As a matter of fact, this clay is the same material used for constructing the hamlet houses, and many of the children were already somewhat practised in handling it for various purposes. While the most skilful children were thus engaged in working on the streets and houses of the bazaar, the others were busy modelling the people of the bazaar in their various occupations of buying, selling, making sweets, sewing on the Singer Hand-machine, or sitting to gossip. Bags for grain were made to measure in the sewing class, and the best of these were selected, filled with the proper grains, and placed in the food bazaar. Pots of various kinds, small bales of cloth, and bundles of wood were also given their proper place. When all was finished, with the little clay merchants and customers in the shops and streets, a very fair representation of an Indian bazaar was produced.

In visiting the bazaar and accumulating the supplies for stocking the miniature shops, it was found that some of the articles for sale had come from Ongole or vicinity, while others had not. The children were interested in this fact; and after some discussion they resolved to find the answer to the following problems. What things in common use by the people of Ongole are produced here, and what are brought from other places? If brought from somewhere else, how do they get here? What things does Ongole send away to other people?

With these questions in mind, another trip was taken to the bazaar in search of information. With the facts there obtained and the experiences of members of the class residing in the country round about to draw upon, the class made two lists: (i) "Things Produced in Ongole", (ii) "Things Not Produced in Ongole". They found that some common articles came from as far away as Burma and even England. But most of the things in the bazaar were found to have come from India itself, many from near the town.

Much spelling knowledge was needed in making the lists and practice in writing them well before they could be given a place in the project note book.

The question of things manufactured in Ongole came up here, and a 'side-project' arose concerning an oil-plant which they visited. It was decided to carry out the process of castor-oil manufacture for themselves; and they succeeded in obtaining a small bottle of oil and some oil-cake, besides making some study of the castor-oil plant and its cultivation.

The school-house is on one of the main roads into the town, and in considering the question of what goods are locally produced, the children observed the cart-loads of grain coming into market. It was decided that the common ox-cart was an important factor in getting the food supplies used in Ongole to the consumer. In recognition of this fact, numbers of cardboard carts were constructed by the children; and the best ones, properly loaded and with their clay driver and his oxen in place, were given room on the streets of the miniature town.

Some of the food supplies, much of the cloth, the kerosene oil, and other common articles were found to have come from places too far away for hauling in carts. This brought up the connection of the railroad to the welfare of the town. The class, therefore, wrote a note, which the Principal signed, to the Agent at the railway-station, requesting permission to go down and observe the handling of goods or freight. The request was granted; and the excursion formed the subject for the next few weeks, embracing as it did the necessity of making records, with composition and spelling difficulties, and some interesting new construction possibilities.

The railroad runs along the outskirts of Ongole, and could be conveniently added to their clay representation of the town. Therefore the next undertaking was the laying out of the track in its proper place, and the addition of a station and freight house or goods shed to the group of buildings, in their proper

relationship and size as determined by the class. Of course a train had to be made to go on the track. After discussion, planning and measurement, two small goods wagons of cardboard, a small coal wagon, and an engine covered with black paper and with a shining smoke stack, were made and set on the rails. Bags of grain, bales of cloth, and so forth made up the contents of the train. Other bags and boxes stood about in the goods shed and on the platform, where clay workmen were busily engaged in handling them. Signals were put in place, and when all was ready the scene aroused the enthusiasm not only of the makers, but all the visitors from other standards, as well as parents and friends.

This completed the means of transportation of goods within Ongole itself. There remained, however, the suggestion that goods sometimes came by way of the Buckingham Canal which runs a few miles south of the town, and which some of the children had seen; and that still more came from across the sea. It was not possible to see actual steamers, but pictures were hunted up by teachers and pupils, showing ships of various sorts and sizes, and by the aid of this collection some of the more skilful children undertook to make a small steamer of cardboard to load with products coming to India from across the sea. The idea of countries beyond the seas and their relation to themselves through articles in daily use was a stimulus to the children for reading and hunting illustrations about these lands.

In talking of goods which entered and left Ongole, the question was discussed as to what was the agency that stimulated this transportation of freight. The children had previously had some occasion to write letters. They had also had considerable practice in exchanging money for goods, not only in the town bazaar, but daily in the shop run by the bigger girls of the school boarding department. They concluded that some merchant or other person had to send messages in order to start these goods on the

way, and were interested in the problem of how money could be paid for articles bought in a distant place. There is no Bank in the town, but Money Orders and Value Payable Parcels come to the school compound daily; and it was decided that the post-office was the agency for carrying on much of this work of exchange of money for goods. A visit to the post-office was, therefore, arranged; and there the machinery of stamps, telegrams, money-orders, registered letters, and other matters were explained. The children wrote a letter ordering a book and wrote a money-order to pay for it. They registered a letter, and sent a telegram. This all called for practice in composition and writing, and for the selection of the best. Stamps of different kinds were seen in the post-office and on letters, and the children became interested in collecting stamps of different countries. They made a post-box where their own letters could be posted, and one child was selected to serve for a time as post-man, with belt, cap, and mail bag made of brown and red paper.

This Project, as a whole, involved most of the Geography or Community Life work for the nine months of the school year. Many subsidiary Projects were undertaken in connection with the main endeavour, and many minor Projects in connection with the subsidiary ones. A good part of the drawing and Nature-study for the year; some of the sewing and hygiene; all of the handwork; a considerable part of the composition work, including spelling and writing; and some of the arithmetic were included in it. Opportunity for hygiene lessons came in connection with the exposure of food to flies and dust in the bazaar; also in regard to the question of strength-giving foods for people and animals to be chosen from among those displayed in the bazaar. In the course of the year some special study was given to the castor-oil plant, two kinds of common grains found in the bazaar, two local trees, the products of which were seen in the bazaar, the Ongole animals that help the people

by producing milk and ghee, and those that help in transportation. This answered the purposes of Nature-study.

For drawing, modelling, and cardboard work, they drew and also made with fibre, cardboard or clay, the scales, baskets, pots and other articles commonly seen in the bazaar. They made figure drawings of people engaged in various kinds of occupations, and clay models of these. They made an attractive border for their room, showing all the different kinds of vehicles used in transportation. They constructed the town bazaar, the station, train, boat, carts, a post-box, and other things. They had practice in problems concerning prices, involving weighing and measuring, in connection with their toy-bazaar. They had much use of the scale or ruler in construction work, each child making a scale of his own for this purpose. Several comparative charts showing approximate ratios of various articles used in the town, and imported and exported, were made. Considerable composition work had to be done in keeping record of all the trips made and the information gained by these trips. Each child kept a record-book of the whole project with plans and drawings. Many new words had to be learned, and their vocabulary was enlarged with each successive experience. Some knowledge of the history of their own town was obtained, and interest was aroused in far off peoples and places.

The result of the year's work was that the children gained a much better realization of themselves as members of a closely knit social group, and a better knowledge and understanding of their own environment and their relation to it. They obtained a large amount of useful information in a vital and attractive way. They had practice in a number of useful skilled trades and habit-forming practices, and had had experience in the important art of planning and working happily together.

Ongole.

SUSAN ROBERTS.

VIII

A COMMUNITY LIFE EXHIBIT.*

A PROJECT carried out by our whole school of three hundred girls was an all-day exhibit to which all interested in educational matters were invited. This was called an Indian Community Life Exhibit, and featured, as the name implies, only things Indian. The object in view was to enhance interest in and appreciation of the best features of ordinary Indian life, to gain a better knowledge of the country and some of its industries and arts, the development of greater skill and pride in workmanship, and the endeavour to encourage better standards and practices in certain matters, especially in connection with hygiene.

The large motive for the exhibit was supplied by a desire on the part of pupils and teachers to have their friends come to see the work they had been doing during the year. The smaller Projects were motivated by the publishing of the list given below. No mention was made of awards, which were for the most part hymnals and other paper-backed books in the vernacular. Except for the purpose of encouraging the formation of a home library, printed certificates would have been as effective for the purpose.

The list was as follows:—

COMMUNITY LIFE EXHIBIT.

I. PREPARATION OF FOOD—(A family of 2 adults and 4 children are taken as unit throughout.)

(1) *Cereals*—

(a) Best cooked rice.

(b) Best prepared and cooked *jonna*.

* Reprinted by the courtesy of the *Village Teachers' Journal*.

- (c) Best prepared and cooked *rāgi*.
 - (d) Best prepared and cooked *sadsa*.
 - (e) Best prepared and cooked *varāga*.
 - (f) Best chart illustrating food properties of the different cereals.
- (2) *Curries*. (To be judged on taste and nutriment value.)
- (a) Best vegetable curry at cost of 3 annas.
 - (b) Best meat curry at cost of 4 annas.
 - (c) Best dal curry at cost of 2 annas.
- (3) *Chutneys*—
- (a) Best simple chutney at cost of 1 anna.
- (4) *Miscellaneous*—
- (a) Chart showing best proportioning of income of Rs. 20 per month, so as to include such items as food, clothing, religious purposes, for family as above.
 - (b) Best weekly menu for family of six expending Rs. 4 per week.

II. HYGIENE—

- (1) Cleanest boarding house and premises during first term.
- (2) Neatest school room and premises during first term.
- (3) Neatest school building and premises during first term.
- (4) Healthiest school child under six (weight, height, skin, teeth, eyes, muscles, etc.).
- (5) Healthiest school child, aged 6 to 10.
- (6) Healthiest school child, aged 10 to 12.
- (7) Healthiest girl over 12 in higher elementary school.
- (8) Healthiest girl in Training School.
- (9) Best chart showing dangers in dirty surroundings, such as standing water, dirty latrines, etc.

- (10) Best chart showing dangers from flies or mosquitoes.

III. SEWING—

- (1) Best plain jacket.
- (2) Best hand-trimmed jacket.
- (3) Best plain frock for small child.
- (4) Best hand-trimmed frock for small child.
- (5) Best embroidered design for border for sari.
- (6) Best suit for Indian doll.

IV. GARDEN—

- (1) Ten best garden workers during first term (Higher Elementary School).
- (2) Ten best garden workers during first term (Practising School).
- (3) Best garden display (training students).
- (4) Best vegetable display from teachers' gardens. (Private gardens.)
- (5) Best original paper on "Advantages of having a Garden".

V. GENERAL INDUSTRIALS—

- (1) Best hemp rope.
- (2) Best cotton rope.
- (3) Best tape.
- (4) Best small mat.
- (5) Best basket for holding grain.
- (6) Best winnowing basket for grain.
- (7) Best fan.
- (8) Best small braided cloth mat.
- (9) Best ornamental basket.
- (10) Best design in basket.
- (11) Best paper on "Advantages in knowing how to do Dhobi Work".

VI. GEOGRAPHY. (Competition by groups, classes, or individuals—5th Standard up).

- (1) Best relief map of India (out-door size).
- (2) Best product map of India.
- (3) Best language map of India.

- (4) Best graph showing relative numbers speaking main languages of India.
- (5) Best sand-table or platform representations of desirable features of Indian community life—1st and 2nd Standards.
- (6) Best sand-table or platform representations of desirable features of Indian community life—3rd, 4th and 5th Standards.

VII. MISCELLANEOUS—

- (1) Best Indian design for book cover.
- (2) Best Indian design for house or courtyard decoration.
- (3) Best Indian animals of clay (Kindergarten).
- (4) Best toy basket (Kindergarten and First Standard).
- (5) Best toy Indian umbrella (First Standard).
- (6) Best Indian doll (Practising School).
- (7) Best collection book of "Wild Flowers of Ongole".

A large part of the work for the exhibit consisted in bringing to a head the work which was already being done or scheduled to be undertaken soon. There were consequently many entries under each section, and the best of these were selected from each standard by the teachers. A group of teachers also estimated prior to the exhibition the proper cost of curries, the kind and amount of food generally in use in the average family represented among the pupils of the school, and other details.

The map-judging on the final day was done by a committee of Hindu school officials from the town; some professional rope and basket-makers came to judge the general industrial exhibit; missionary and Indian women judges together rated the sewing; the mission hospital staff gave of its services in the hygiene department; while well qualified members of the Christian community acted as judges in other sections of the exhibit. Two girls were selected by each class

to wear the school colours and act as ushers and guides to the visitors.

The platform representations of Indian community life were a popular feature of the exhibit. The First Standard showed their house with the doll family and furnishings; also a row of miniature shops of cardboard showing the various articles in use in the home, all this having been a part of the previous work of the year. The Second Standard displayed an Indian village and farms, with clay people and animals engaged in various occupations. The Third Standard gave a representation of Ongole with the streets, principal buildings, railroad, etc., in proper relation. The Fourth Standard had a scene from Burma showing among other things a lumber yard with elephants piling teak logs. A group from the Higher Elementary School illustrated some features of Indian life of the hills and the plains.

All standards displayed reading, writing, plan drawing, composition, etc., done in connection with their various enterprises through the year.

The First Standard and Kindergarten classes remained at regular work throughout the exhibit for the benefit of visitors wishing to see the methods employed.

Only teachers and patrons especially interested in school affairs were invited, but a large crowd was in attendance throughout the day and for two days thereafter, because of village teachers who wished to come. Many expressed themselves as having received some useful ideas.

Ongole.

SUSAN ROBERTS

IX

HOME-LIFE IN BENGAL AND CHINA

KAMARAPARA Upper Primary School, where the Project Method has been employed for three years, is one of the United Free Church of Scotland Mission Schools in Chinsurah, Bengal. The pupils, all Hindu girls, number about 150, and are the daughters of small shop-keepers or of office clerks. Two Projects used there are described below : (i) A Bengali Home, and (ii) a Chinese Home.

I. A Bengali Home.—

This Project has been carried out with great success in the Kindergarten class, where the children number from 30 to 40. In this class, the advantage of the Project Method over older methods is very marked. The children learn to read very quickly, and cover a great deal more reading material than formerly. They show an interest in arithmetic, and enjoy their sewing with an enthusiasm never before seen. The children are introduced to their project through play with Froebel's Gift Bricks, with which they make small houses, tables, chairs and beds. For variety, they make these articles also with small sticks or mud.

In the *Reading Period*, letters are not taught but words. The words "house", "room", "table", "chair", etc., are written in a certain order on the black-board, and in the same order on a large sheet of brown paper. The children learn these by "the Look and Say" method. This, at first, leads to memorising, but in a very short time, the children can read any familiar word that is pointed out to them.

Counting and the recognition of number are taught by the use of bricks and sticks, and through references to the articles made with these; for example, the

number of bricks or sticks required to make a house, or a table or a chair; also, the number required for two or three such objects.

In this way addition and subtraction are learned. For example, "We have received 8 bricks, then 2 bricks; and again 6 bricks, for our house; how many bricks have we?" "We are given 6 bricks; we make a table with 4; how many are left?"

Writing:—The children are taught to write the words which form their reading lesson. They do not write individual letters, but whole words.

The first large Project which this class attempts is the making of a small mud house. The house contains five or six rooms, and each room is made by a group of four or of six children, the group number depending on the size of the class. The separate rooms are made on the children's wooden trays. The walls are about 6 inches high; bamboo sticks which the children break and prepare are placed in the clay to strengthen the walls. The roof is made of thin cardboard, placed on the bamboo sticks and covered over with mud. The children put the chairs, tables and beds previously made into the house. The house may be made of sand if the Project is carried out in the Rains' term; if not, clay should be used, as the sand dries up too quickly in the hot season.

The reading material of this class is as follows:—house; room; door; window; table; chair; bed; sleeping; girl; clay. These words are written in the same order on both the black-board, and on a large sheet of brown paper, and the children again learn them by the "Look and Say" method. Each word is also written on squares of coloured paper with which the children play various games, *e.g.*, (1) Each child holds a square, and 'General Post' is played; "house" changes with "chair", etc. (2) The squares are hidden, and the children are asked to find "table" or "room", etc. These games greatly aid the children in recognising the words. These same words are afterwards used in the sentences:—

We are little girls.
We have a big house.
We have four rooms in our house.
In each room, there is a door.
In each room, there are four windows.
In each room, there is a table, a chair and a bed.
In the sleeping room, there is a bed.

The words and order are then varied :

We have made small houses.
In each room, there are three windows.
In each room, there is one door.
In each room, there is a table, a chair and a bed.
We have made the house, table, chair and a bed of clay.

Writing :—Words and phrases copied from the stories.

Arithmetic (Mental only):—Addition and subtraction are taught in terms of houses, rooms, tables, etc. ; e.g., "The sand for one room costs 2 pice; for a second 3 pice; and for a third 4 pice. How much money do we need?"

Nature-Study :—Sand; bamboo; trees; etc.

Hygiene :—Suitable sites for houses; necessity for windows and doors, teaching about cleanliness.

Sewing Mats :—

In this class, a second Project also is carried out, which introduces the children to sewing. They make mats and curtains for a big house already made by another class, and thus get some little idea of co-operation and helpfulness.

It may be of interest to know how this larger house is made. It contains two rooms, a cook-house and a verandah. It is made of clay, and while making it the children work in three groups. One group builds up the walls; a second group kneads and softens the clay, and the third group, with dung and water, keeps the walls smooth and wet. When the walls are made, but still moist, the children cut doors and windows. Then they, with their teacher's help, cut bamboos into long thin strips, and with these the roof is made. Finally the roof is covered with cardboard, which is tied to the bamboo frame.

After the mats, curtains and bed-quilts are completed, the children make two sizes of cloth dolls, and dress them in saris and dhotis. A long piece of cloth is tightly rolled up and sewed down one side; then doubled and crossed. It is tied a little way down from the top to form the doll's head; and a little below that to form the shoulders. In the hole thus formed, a similar and much smaller piece of round cloth is inserted, and this forms the hands and arms of the doll. The loose ends of the first piece of cloth form its legs. Black thread is twisted over the head for hair; and the faces are drawn in black ink.

Reading:—At this stage, new words are taught in connection with the new project. It should be noted that, in Bengali, "is" and "are" are expressed by the same word, and singular and plural words are the same, so that the same word comes to be repeated many times. Sentences such as the following are given :

Some little girls have made a big house.

There are two rooms in that house.

In one room, there are two windows.

In the other room, there are three windows.

We are little girls.

We are sewing mats.

We are sewing paper mats with thread.

We are little girls.

We are sewing dolls.

We are sewing cloth dolls.

We shall make the doll's nose, eyes and mouth with ink.

We shall make their hair of black thread.

We shall make four families of dolls.

In each family, there will be a father, a mother, a sister and a brother.

We shall give our dolls names.

We have made some dolls, and we have made four families of them. In each family, there are a father, a mother, a brother, and a sister.

There are four families.

They are the Dey family, the Ghosh family, the Shil family and the Das family.

We are sewing clothes for them.

We are sewing dhotis for the father and the brother.

We are sewing saris for the mother and the sister.

We are sewing sari borders.

When the clothes are finished, we shall dress our dolls.

By this time the children have learnt to recognise most of the letters, and can spell out new words such as :

We have been at school for four months.

We have learnt to read.

We have learnt to write.

We have learnt to sew.

Now, we are drawing threads out of old cloth.

With this thread we are making bordered quilts.

These quilts are for our dolls.

Writing :—From the stories. Dictation also is done from these.

Arithmetic :—By this time, the children are doing sums in addition on their slates. These are done in terms of the daily bazaar; of the price of cloth required for the saris and dhotis; or of the numbers of dolls in the families, e.g., to make 4 dolls, we require 8 piece worth of needles, 12 piece worth of thread, and 24 piece worth of cloth. How much money must we spend?

Conversation Period :—The home; furniture; cooking utensils; daily bazaar.

Hygiene :—Clothes, kind required at different seasons, their usages, etc.

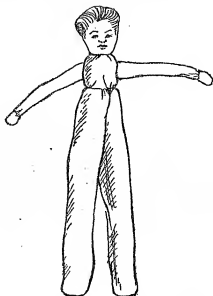
Drawing and Modelling of cooking utensils; of vegetables and fruits used in the daily bazaar in a Hindu household.

II. A Chinese Home.—

This was carried out by the girls of the lower division of Class II. There are usually about thirty children in the class, their ages ranging from eight to ten years. They make and dress two families of dolls, each family consisting of six members. The making of these dolls is somewhat more elaborate than the process described in the Bengali House project.

Designs for the dolls are drawn on the blackboard by the teachers, the head and body being all in one piece. The children draw similar designs on paper and cut them out. They then place their paper patterns on *markin*—unbleached cotton—and with a

little help from their teachers cut out cloth patterns which are then sewn up, keeping legs, arms, and bodies separate, and stuffed with saw-dust, or with cotton wool from the pods of the silk-cotton tree. The doll



is then completed by sewing the various parts together. The faces of the dolls are first drawn in ink, the features being made as Chinese as possible, and are then sewn in black thread. Their hair is arranged in Chinese fashion. Two sets of clothes are made for these dolls; the one set of *markin* is like those worn daily in China; the other set is like those worn on special occasions such as on feast days or for wedding. The clothes consist of coat, pyjamas and small round cap with a tassel on the top. Two suits for special occasions are made of better material in colours. The pyjamas are in pink, and jackets and caps blue, or *vice versa*; and the jackets are embroidered with white, green

or heliotrope thread, in simple designs drawn by the children. These dolls (twelve for the class) can be made out of 2 yards of *markin* and the clothes require from 2 to 4 yards.

In the *reading period*, the girls read specially prepared stories which contain accounts of various Chinese customs. They are taught these by the story method.

All four operations of *Arithmetic* are taught in this class, in terms of the Project; e.g., (1) "If we need 112 inches of cloth to make and clothe one doll, how much cloth will be necessary to make and clothe 8 such dolls?" (2) If one of our dolls is sold for 12 pice, how many dolls can we sell for 108 pice?

Writing and Dictation are done from these stories.

In *Conversation*, other information about China not contained in the stories is given such as "Boyhood in China"; "School Days"; "A Chinese Dinner Party", etc.

Handwork :—Fisherman's hats and boats, caps, and chop-sticks are drawn and modelled in clay.

The two Bengali Projects and the one on the Chinese Home require six months each for completion. It will be noted that sewing forms the greater part of the "Project" work. This is a necessity, as sewing is of great importance in girls' schools, and a high standard is demanded in it by the Inspectress.

As our schools receive small grants from Government, certain books prescribed by Government must be read. Only three days, therefore, are spent in learning to read the stories here translated. The other two days of the week are given to the reading of the Government prescribed books. The amount of reading-material which the children get through is thus considerably increased. By the time they reach Class II,—that is, in a year or a little more,—they have acquired an ease in reading and a desire for it, which, we hope, will urge them to keep on reading for themselves, after they leave school, which is often at the age of nine or ten.

The children buy the dolls and bed-clothes which they make for small sums such as five to eight annas, and the money thus collected is used to help to pay the fees of any child too poor to pay her own.

Bible Lessons.

These do not always have either a "Home" or "Project" connection, but wherever possible, a connecting link is made.

The following schemes of Bible Lessons containing a "Home" idea have been used :—

I. *"The Boyhood of Christ."*

- (a) Home Life in Nazareth (Luke 2 : 39-52).
- (b) School Days in Nazareth (Luke 2 : 52)
- (c) Sabbath Days in Nazareth (Luke 4 : 16).
- (d) Pastimes and Holidays (Verses from first three Gospels).
- (e) Christ's Friendships (Mk. 1 : 16-20 ; Luke 5 : 1-11).

II. *"Hebrew Homes."*

- (a) Joseph and His Father (Gen. 37 : 1-17).
- (b) Joseph and His Brothers (Gen. 37 : 3-36).
- (c) Joseph in Potiphar's House (Gen. 39 : 1-23).
- (d) Joseph's Kindness to his Brothers (Gen. 45 : 1-24).
- (e) Joseph's Care of his Father (Gen. 47 : 1-12).
- (f) David's Home and Work (I Sam. Chaps. 16 and 17).
- (g) The Prophet's Visit to his Home (I Sam. 16 : 1-13).
- (h) David and Goliath (I Sam. 17 : 1-58).
- (i) David and Jonathan (I Sam. Chaps. 18, 19 and 20).
- (j) David and the lame Prince (II Sam. 9 : 1-13).

III. *"Children as God's Gift."*

- (a) Children, the Gift of God (I Sam. 1 : 1-29).
- (b) Samuel's Boyhood (I Sam. 2, 18 and 19 ; 3 : 1-14).
- (c) Moses' Boyhood (Exodus 2 : 1-10).
- (d) Ruth and Naomi (Ruth 1 : 1-22).
- (e) Ruth's Marriage (Ruth 2 : 1-23 ; 4 : 13-16).
- (f) A sorrowing mother comforted (II Kings 4 : 8-37).
- (g) Jairus' Daughter (Luke 8 : 41-56).
- (h) Abraham's Home (Gen. 12 : 1-9).
- (i) Daniel's Boyhood (Dan. 1 : 1-21).
- (j) The Story of a Widow (II Kings 4 : 1-7).
- (k) A Father's Love (Luke 15 : 11-24).
- (l) Our Heavenly Home (Rev. 21 : 1 ; 22 : 5).

In these ways, the Bible Teaching and the Projects help each other to impress the same great central lessons.

Chinsurah.

AGNES C. D. WESTWATER.

X

"JUNGLE-WEEK"

(A HEALTH PROJECT IN BENGAL.)

ILL-HEALTH and Malaria are at the root of most of Bengal's troubles. Tackle these, and many other things become possible. Leave these untackled, and nothing is possible.

The Anti-Malaria and Health Society at Chapra, with the Principal of the Boys' School as its president, is a fairly vigorous body with a three years' history behind it. At present it is largely a school society; most of the teachers and students in training, and all the school prefects, being active members. In the year 1928 it made a special effort to rid the village, as far as possible, of at least one cause of the prevalence of mosquitoes, *viz.*, jungle.

The previous efforts of the Society were encouraging. Raising funds by collections, and by grants from the local Union Board, the Society had distributed quinine, and effected health-giving improvements here and there within the village. At intervals, groups of members had been out, tools in hand, attacking the jungle which grows so profusely in this part of Bengal in the rains, and which affords such abundant shelter for the mosquitoes.

This year the Society felt that a forward movement was due, and laid its plans accordingly. First of all the village was divided into four areas, and each area was allotted for survey to a group of members under a leader. A map of the village was prepared, enlarged from the maps which owners of land receive from the Government Settlement Officer; and at a preliminary meeting it was arranged what things groups on survey work would specially look for (jungly places, holes with stagnant water, dirty wells, etc., etc.) and a conventional sign for each was arranged. A week or so later the reports of the survey and the "spot-maps"

filled in, were presented to the Society. Forthwith 'working groups' were constituted, and in the ensuing weeks—weeks in the rainy season when jungle seems to spring up everywhere overnight—groups could be seen occasionally moving here and there in the village area, valiantly attacking the rampant undergrowth and suffering the curse of Adam.

But such spasmodic skirmishing left the enemy unafraid. Like some devilish hydra, it seemed to push out more heads, the more we slew. We were being beaten.

Our project was to clean the village; but it was apparent that public opinion must be roused and a special concentrated effort made. The inevitable committee was appointed to consider the situation and recommend; and later, on their recommendation, it was agreed:—

(1) That a special Anti-malaria and Jungle-cutting Week be held, during which a supreme effort would be made to clean up the village. Members of the Society and others would devote all possible spare time during that week to cutting jungle in the village.

(2) That during this Jungle-cutting Week every effort would be made to stir up public opinion on the subject. Among the methods of propaganda suggested were dramas, lantern lectures, posters and singing processions.

(3) That small money-prizes would be offered for the best original dramatic entertainments produced, and for the best *sankirtans** suitable for propaganda purposes in the village. Also that a few money-prizes be offered for the tidiest compounds in the village.

Two dramas were produced. Both were good, and it was decided to have each produced twice during Jungle-cutting Week, and to have a magic lantern lecture on the other days. Out of several *sankirtans* presented, two or three excellent ones composed in popular language and in humorous vein and set to

* A *Sankirtan* or *Kirtan*=Chorus-singing to the accompaniment of drums and cymbals.

popular tunes were chosen, and were soon being practised and sung all over the school compound.

With that and other preparations, the intervening days before jungle-week were busy enough. Special periods had to be allotted for practice of the dramas and of the *sankirtans*, and a good deal of preliminary jungle-cutting work was done, groups going out armed to slay the jungle and to 'propagandise', putting up posters like Orlando, on every tree:—"Cut the jungle! Kill the mosquitoes!"—and calling on householders to get to work.

Since we had few of the right kind of posters, we had to make our own, with sheets of the cheap brown paper that village people use for their accounts; and our two slogans above referred to were stencilled on in huge Bengali characters—"Cut the jungle! Slay the mosquitoes!". During the week before Jungle-week these were posted up in various parts of the village.

During Jungle-week itself the daily programme of health work was somewhat as follows:—

7—9 A.M. Jungle-cutting by all and sundry.

6—30 P.M. *Sankirtan*, through the village.

7—30—9—30 P.M. Dramatic performance with Health Propaganda for all the village in the school hall.

In addition a number of the classes took special periods at "jungling" near the school, even in the heat of the day, and during the day a great deal of preparatory work was done by students and pupils—making the posters, preparing the hall and platform, making "costumes" for the actors, and learning up the parts.

It was the conviction of the school authorities that for such a Project it was right if necessary to let the ordinary school programme go by the board; the educative value of such work was obvious. But it was found possible to do all this without setting aside all the ordinary work of the classes. In the higher classes and in the training school probably the larger part of the pupil's time was devoted during the week to this Health Work; but with boys and students

preparing, most of them, for a village life and for work amongst village people in Bengal, nothing could be more educative and appropriate.

The morning bands which assembled daily at 7 A.M., after Morning Chapel, reminded one of the stories of Monmouth's rebellion in the old history books. They were "a noble army of men and boys", with bill-hooks and hatchets, rice-cutters and shears, and in one case a long scimitar-like weapon which, it is believed, belonged or belongs to the Principal, and which did great destruction amongst the thorny bushes!

There is a story attached to that weapon. The head-master of the school, the leader of one group, was one morning in the front line, attacking the enemy with the Principal's formidable sword. They came to a homestead where a poor old man and woman not only did not themselves cut their jungle but objected that one at least of the sprawling thorny trees was an object of worship or contained some kind of spirit, and must be spared. Reluctantly the swordsman will hold his zealous blade and pass on, only to hear a similar story repeated to him by another woman at the next halt. This time his pent-up zeal would brook no obstruction: "Down with your spirit-worship!"—(*Bang!*)—"There is no god"—(*Bang!*)—"but one God!"—(*Bang, Bang, Bang!*)....."and so perish all health's enemies!"

Such high enthusiasm of course was not always maintained. Hands unaccustomed to handle tools were blistered and re-blistered; and the boys' joy in climbing trees and sitting in risky positions hacking off branches, had to be set off against hands torn and punctured all over by thorns, and attacks from numerous red ants whose homes had been rashly smashed. And there were times, needless to say, when boys and adults grew a little weary in well doing, when the heat and perspiration, the troublesomeness of hacking away with blunted tools at tough trees, and the feeling that it ought to be nearly breakfast time, 'wore some of the gilt off the ginger bread'.

But when they turned up, bathed, for breakfast, most of them were ready to prove beyond a shadow of doubt that their group had excelled all the others in keenness and in achievement.

It was not, of course, the intention of the Society that the work of jungle-cutting should be done for those who could do it for themselves. The groups tried their utmost to persuade each householder to clean up his or her own compound; and it was announced that prizes would be given for the cleanest homestead. In many cases the volunteers rendered assistance especially to the old or helpless, or to those who had more than they could undertake; but if such help was given, those assisted became ineligible for a prize.

Then each evening, as a preliminary to the entertainment in the school, the *Sankirtan* procession moved round the village. A huge board with a notice of the evening's meeting and the slogan—"Cut the jungle! Kill the mosquitoes!"—was carried in front lit up by a hurricane lamp, and other posters similarly illuminated accompanied the songsters, who, when they returned half-an-hour later from their tour, came accompanied followed by a substantial crowd of villagers. Large numbers, men and women, attended the meetings every evening. Some local village leader "took the chair" on each occasion, and he was warned that his words must be few. Then the music and acting in which the audience saw King Malaria and his myrmidons (the mosquitoes) brought to destruction and Mother India delivered in the end from her desolation and distress, by her zealous jungle-cutting children; songs, sometimes well sung, sometimes not so well; some scenes that fell flat, and some that roused the audience to enthusiasm; scenery that was generally adequate, but made up from what could be found at hand; all went to make a quite effective entertainment, and it is safe to say that at least it was impressed on the audience that they should be up and doing.

One evening was rather a failure. The man sent to lecture with lantern slides had no popular touch nor could his voice be heard in the hall. We changed our programme next evening accordingly, and had one magic lantern night instead of two, finishing up on Friday instead of Saturday. On the latter day we had a holiday after a good spell of jungling in the morning.

The following week the small money-prizes were allotted for the best cleaned compounds and for the entertainments, and at a special return performance of one of the dramas these were distributed to the lucky winners.

Apart from these few prizes (Rs. 17 was distributed in all, of which Rs. 10 was a special gift) there were almost no expenses for this Project. A few annas were spent on paper for posters; the bamboos for the platform were sold afterwards and the tools which we used (apart from those borrowed) remained the property of the Society for future work.

Results are hard to estimate, but the following can safely be put to our credit:—

(1) A large amount of jungle was cut down. Some homesteads were beautifully cleaned and many partially cleaned: and in public places and by roadways throughout the village a great improvement was effected.

(2) A certain amount of public opinion was created. Some progress was made towards the state of things when it will be reckoned a disgrace to have a jungle compound. Moreover leading villagers roped in as chairmen of the meetings became themselves keener, which no doubt was one of the reasons why we had little or none of the cynical opposition that we at one time feared. Probably the risk of such opposition was done away with from the beginning by the fact that the leaders of the Society (*e.g.*, the Principal of the school, the leading doctor of the village, the teachers, etc.) all took a leading part, not merely by speaking but by doing the actual work of jungle-cutting.

(3) The school pupils and training students received the best series of practical hygiene lessons that they have ever got in their lives. From one point of view education is the establishing of the right reactions to stimuli. The right reaction to jungle in Bengal is to attack it with a bill-hook. All *know* that, but few have learned it by doing; and that is what the boys and students learned during Jungle-Week. And for the training students whose lives we hope will be cast in village schools, this kind of practical village work is an essential if they are to help Bengal out of its distresses.

(4) The Society has got a new strength and will be able to go to other tasks with far more zeal and confidence and efficiency. No one is satisfied that we have made more than a beginning; but it has been a real beginning.

Chopra.

F. RYRIE.

XI

SERVICE TO THE SICK

(A UNIT OF WORK IN CLASS VI OF THE RURAL
COMMUNITY MIDDLE SCHOOL, MOGA*)

CLASS VI which undertook this project was made up of about twenty Christian boys from as many different villages. Most of them have been several years in the Moga School. Their teacher has several qualities which are essential for success in this type of teaching. First, he is a friendly leader. The pupils trust him and ask his guidance in making their plans. Second, he knows how to listen. The pupils talk freely in his presence. Third, he is resourceful. He is ready with suggestions which help to stimulate interest and keep the work going. Fourth, he expects his pupils to work hard, and tries not to do for them what they can do themselves. Fifth, he is himself industrious, and uses every possible means to supplement his own knowledge, so that he may keep the Project moving out into richer fields of interest. As he had himself once studied compounding, he had a little technical knowledge useful in the Project which the class chose. This unit was chosen in two consecutive years by Class VI. The description which follows combines the experiences of both classes.

How the Unit was selected.

The teacher had in mind the needs of these boys about which he had been thinking. It seemed to him that village boys of this age should know more about the prevention and cure of common sicknesses. He thought of his own knowledge and experience in these

* The original report of this Project was written in Urdu, by Mr. Nasir-ud-Din, a teacher in the Moga School.

matters, and was prepared to help the boys in case they wished to learn what he knew. He did not plan out a set Project, but he did plan rather carefully the class discussion for the first day, and had in mind some suggestions for work. He was prepared for several possible *leads* which might come out of the conversation.

The teacher describes the first sessions as follows:—
“When our school opened after the vacation, and the pupils entered my class (VI year) I enquired as usual after their welfare. I asked especially which of them had been ill during the vacation. Several pupils told us that they had had fever, some reported that they had received small hurts while working, one said that he had cut his foot with a digging-tool, and one said that his eyes had given him much trouble. Then I asked what remedies they had used. In this way they learned that proper medicines are not used in the villages, and there is reason to fear that most of the remedies aggravate the diseases. I enquired about various common methods of treating sickness, as magic, sacrifice, the use of charms, etc. Then I explained, giving many examples, the harm of such methods. There was at hand, right on our compound, a striking example. The two little daughters of the *bhisti* who brings water for the compound, had lost their sight because they had not used proper medicines. The pupils made a personal investigation of this matter. After that we read about the dangers from carelessness in different diseases.

“Then we discussed magic, etc., and the boys looked up a number of Bible references, from the study of which they saw clearly that there is no use in magic and charms, and that God is displeased with those who use them.

“Then the boys began to feel a desire to know the proper way of treating diseases. They said they wanted to learn about the right remedies in order that when there was no hospital near they might help themselves and other village people. Then I asked them

how we could obtain correct information. They suggested hospitals and various doctors' books. Then a full discussion followed, in which it was brought out that all the pupils could not enter hospitals for training in medicine; yet all desired some practical knowledge for everyday use. For that reason they requested me to teach them about these things in the class.

"I then brought out by an illustration that in order to begin this work we must see and study a hospital. When any one wants to learn carpenter's work, he must take tools and wood and learn from using them. If he is only *told* that the wood is shaped with the chisel, is smoothed off with the plane, and is cut with the saw, then he will never master the trade of carpentry. The whole class decided that they would construct, in class, a hospital on the plan of the Moga Hospital."

The General Development of the Unit.

The boys arranged for their visit to the hospital and dispensary. They found so much of interest that they made other visits. Discussion, study and investigation of the questions which were constantly arising, occupied about a period of the class-time for six weeks. At the same time much writing was found necessary, a good deal of calculating, much reading, some study of geography and history, some drawing, and some Bible study. The various activities connected with the project came gradually to occupy a large part of the class-time which would ordinarily be given to formal study of the required subjects. The teacher, of course, kept in mind the Government Syllabus in arithmetic, geography, history and reading, and succeeded in supplying a motive for much of the required work through the boys' interest in their investigations.

The result of the study was that the class decided it was not practicable to build a model of the hospital inside their class-room. They therefore abandoned their first purpose and decided to set aside at the rear

of their class-room space for a dispensary and a dressing-room for "First Aid". This second purpose then became their Major Project, and so rich in interest did it become that it occupied the class for the remainder of the year. This is a good instance of right technique in using the Project Method. The teacher helped the class to go forward, with effort, in the direction of their purpose. They overcame many difficulties, but when the difficulties became of such a character that solving them might waste time and not attain the fullest possible educational value, the teacher helped them to discuss the matter fully, and adopt a more practicable and more useful purpose. The adoption of a Project of Service to others was a more valuable religious lesson than any formal study of the duty of social service. The next year, when Class VI again chose this Dispensary Project, the study of the Moga Hospital became the preliminary stage of their work.

This Major Project led, as all good Projects do, into related or sub-projects. Some of these are described in the following extract from the teacher's report:—

"Since the furnishings and supplies were borrowed in various ways and from different persons, it was necessary to keep a record of them. For this reason the pupils chose a secretary from among themselves, and he was given a note-book to keep the list of all supplies, the account of the income of the collection box and expenditures. When everything was assembled we turned our classroom into a dispensary and dressing room. The school medicines which were usually kept in the hostel for pupils were secured by request and were placed in our dispensary. When the work began, it was found necessary to make a register and forms like a real hospital. The pupils then appointed two boys to go to the Moga Hospital to see the register and forms used there. The pupils brought back several forms in English. They then made a register of patients and other papers according to the model of the Moga Hospital.

"Next came a discussion about the time of opening and closing the dispensary. It was decided that the first school-period should be set aside for this work, and in the evening, too, a little time would be given. Then they had to write to announce the news of the dispensary to sick folks. They wrote a proclamation to the effect that, for the sake of the comfort of the people of the Mission Compound, a dispensary had been opened in the room of the VI class where, at certain times, medicines could be obtained. We stated that we would ourselves give medicines for slight ailments, and if other sick people would go once to the hospital in the city for medicine and then give us their prescription slips we would get the medicine from the hospital for them, and dispense it from our own dispensary. In this way sick people would have the trouble of going only once to the city hospital. This proclamation was written co-operatively by the class and affixed to various places in the compound.

"When the room was ready we had a conversation about carrying on the work. The pupils divided themselves into four parties. One party saw the patients, entered their names in the register and gave them slips. One pupil of this party went to the hostel to give medicine to the boarding pupils who were sick. A second party did the work of giving out medicine and applying it. The third and fourth parties filled out the forms, did bandages and were responsible for making up medicines. Every day the work of these parties was changed. When the patients came, prayer was offered with them for God's help before the work was begun.

"When the dispensary had been going on for some time the pupils realised that certain important medicines were being very quickly used up. Because they could not be obtained in quantity from the City Hospital, the class thought that some money should be collected and necessary medicines bought from the bazaar. After sufficient discussion, it was decided that as this necessity would be a permanent one, a

collection-box ought to be made and hung up in our room, in order that not only we but others also who came to get medicines or to see the work could drop in something if they wished. This plan pleased all and was carried out. The hope of the pupils was fulfilled and the work went on without hindrance.

"Our dispensary became famous in the school. Then I had a chance to give a magic lantern lecture to the whole school on physiology. On the material of this lecture my class took an examination and also did some reading."

The class met some of their problems in a way that should give encouragement to those who believe in the character-building values of these freer methods of teaching. For instance, a table was needed for dressings. They inquired the price of tables in the bazaar (Rs. 3-8-0), then calculated the cost of the wood (Re. 1-8-0). They decided they could save money by making the table. They made a written request to the Principal for Re. 1-8-0 from school funds to buy the wood. This was the only instance when the class asked for school funds for their enterprise. The classroom for a few days became a busy shop. No time was wasted. In order to save time for the work, the boys studied extra hard. At any time of the school day, three boys would be seen sawing, planing or hammering in one section of the room, while other groups would be seated on the floor, making calculations, drawings, writing accounts of the work or studying formal lessons.

Another of the sub-projects is thus described by the teacher:—

"In the beginning of December there was conversation in the class about preparations for Christmas. After some discussion the class decided to make some toys and clothing for babies in the Ferozepore Hospital. And they wanted also to make paper chains for the decoration of the school hall. After this they decided that they would buy with their own money the material for making the gifts for the

Ferozepore babies. They took up a collection and bought several small pieces of cloth from which they made six tiny *kurtas* and they also made some rattles and scrap-books. They got from the school the coloured paper from which they made chains. As the Christmas holidays drew near, I noticed that almost all the pupils in my class were making various things to take home as gifts. Some of them had prepared, or had had made in the bazaar, for their little brothers and sisters, clothing, toys, caps, etc., and almost all had made coloured paper decorations and chains for the decoration of their own homes. Four pupils who were going to the same village prepared to tell stories to the village people. Almost every boy took some medicine home with him; for instance, quinine, zinc lotion, cough mixture, spleen mixture, tincture of iodine. The spirit of love, service and giving was working in the pupils. Then I read with them the following references from the Bible, from which they received joy and strength: Acts 20:35, I Cor. 16:2; II Cor. 8:7; Mal. 3:10, 11."

During the second year's experience with the dispensary, the missionary's wife discovered mosquito larvæ developing in the unused house on her compound. She sent an 'S. O. S. call' to Class VI, who instantly (in the middle of a class session!) mobilised to investigate and fight the danger. This produced a new access of interest in the prevention of malaria, especially by mosquito extermination. This phase had not been thoroughly studied before and the master was quick to seize the opportunity. The class studied, observed and experimented, made charts on the life history of the mosquito, cleaned up the Memsahiba's compound, and prepared a careful report for her with advice as to regular inspection and other means for conquering the mosquitoes.

The dispensary project, as it finally developed, is thus described by a visitor* :—

* The Rev. O. Thomas, of Assam.

"The day I spent in this class I found the school boys requiring treatment waiting in a queue, and one boy acting as clerk and filling in the forms, which had been prepared by the class, with the name of the patient, his disease and the prescription given in consultation with the teacher. Another boy did the dispensing, and a third boy dealt with sores. Some of the boys were preparing patients' forms, one boy was preparing a form to record the height and weight of the class, and another was attending to the register of patients. The remainder of the class was engaged in a weekly stock-taking and preparing a list of drugs to be ordered. The actual quantities required, with their cost, were written on the blackboard. The cost of the drugs required amounted to 12 annas and 6 pies. The teacher, thereupon, got the boys to work out by the unitary, proportion and multiplication methods, the cost for a year at 12 as. 6 p. per week.

It was a great pleasure being in the class and seeing the keenness of the boys and evident interest and pride they took in their work. The classroom, too, reflected the interest of the boys, for the walls were covered with diagrams, charts, maps and pictures prepared or collected by the boys."

The following summary is given to show as many as possible of the details of this Project, as they actually developed, and to give an appraisal of their educational values, so far as the teacher and supervisor are able to judge them. More accurate measures than such opinions are not at present available in India. If 'standardised achievement tests' in Urdu were in use, we should undoubtedly be able to pass more accurate judgments on the success of the method.

Problems which arose (listed approximately in the order of their occurrence).

Why did the deep cut on Prem's ankle not heal more quickly?

What methods do our relatives and neighbours in the villages use to treat sores?

How many persons in our village communities (Christian sections of the villages) had fever during the weeks we were at home?

How many of them received medical aid?

How many of them consulted a *hakim*?

What values are there in the *Panani* system of medicine?

Why do the people of our village resort to charms and magic to heal disease?

What sacrifices do the people perform in times of sickness?

What caused the blindness of Barkati and Phulmani?

What does the Bible teach about magic?

How can we help our people to overcome these superstitions?

Can we do anything to help the sick?

How can we learn the best methods of treating sores, fevers, diseased eyes, etc.?

What Government publications can we secure for our study?

How can we become doctors?

If we do not go up for training in medicine, can we still gain enough practical knowledge of hygiene and medicine for every-day life?

How shall we reconcile the differing measurements of different pupils? How shall we find an average?

How shall we learn the cost of the buildings?

Are the buildings well adapted to their use?

Where have all these sick folk come from?

What different kinds of homes do they live in?

How far have they travelled?

By what methods of travel have they come?

What diseases have they?

What are the most common diseases and what proportion of all the patients are suffering from each?

What drugs are most used in this dispensary? What are the amounts of each, and what are the prices?

How are drugs weighed?

From what countries are the various drugs secured? From what are they produced?

What medicinal herbs are grown in India?

When was Western medicine introduced into India?

What was the attitude of various rulers of Indian history, towards medicine and physicians?

What different kinds of healing miracles did Jesus perform?

What can we learn from Jesus' healing miracles that may help us in the treatment of the sick?

How can we record the facts we have learned about the Moga Hospital?

How can we best thank the doctors and staff of the hospital for kindly explaining everything to us?

How much space will be needed to build a model of R. B. Dr. Mathra Das' Hospital in our classroom?

Of what use will such a play-hospital be?

- What was our first reason for studying the Moga Hospital?
Will building a model of the hospital help us in our purpose?
How can we get practice in improving the health of ourselves and others?
Can we help the house-father in taking care of the pupils sick in the hospital?
Can we spare room enough for a dispensary in the classroom?
How can we start a dispensary?
How shall we provide furniture and equipment?
What furniture and equipment do we need? What is in the Government dispensary?
What is the proper way to request our masters, Principal, etc. to lend us articles?
How can we keep from forgetting to return borrowed articles?
How can we meet the need for a table for dressings?
What records shall we keep?
What kind of a register and forms are used in Moga Hospital?
What time shall we hold our dispensary?
How shall we announce the opening of our dispensary?
What will be our daily duties?
How shall we divide the responsibilities?
Shall we begin each morning with prayer?
How will prayer help us? What parts of the Bible will help us to answer this question?
What system shall we use for checking up on supplies, expenditures, orders for the coming week, etc.?
What shall be done when patients have some trouble which we cannot treat?
How can we help the women who have to walk two miles to get medicine for their babies from the Government dispensary?
What shall we name our dispensary?
How shall we thank R. B. Dr. Mathra Das for giving us his picture?
Where shall we hang the picture of R. B. Dr. Mathra Das?
How should drugs be weighed and measured?
How should bottles be labelled?
What will be the probable cost of running our dispensary?
How shall we meet this cost?
What are the commonest diseases in Punjab villages?
Which disease will be most useful for us to study?
What books will help us to learn about the cause and cure of malaria?
How shall we secure books not now in our school library?
How shall we find the information in these books?
What is the Junior Red Cross?
Will it be worth while for us to join the Junior Red Cross?
Will the Boy Scouts teach us anything?
Should we be interested in how to care for young children?
What is the cause of malaria?

- How can malaria be prevented?
 What is the cost of quinine?
 How can we show on charts and posters the facts we have learned about malaria?
 How shall we prepare a talk to the school on malaria?
 Why is quinine given to all the pupils of our school?
 What is the cost of this method of malaria prevention?
 Why are not quinine pills (*golian*) given?
 Should school boys be compelled to take bitter medicine?
 How can we arrange to administer the quinine?
 Can we make the quinine mixture ourselves?
 What is the condition of health in our own class?
 What is our average weight? Is it up to standard?
 How can we improve our weight?
 How shall we keep a weight record?
 Are cigarettes injurious?
 How many patients have we treated so far?
 What is the average per day?
 Why have we made so many errors in our register?
 Do we need more practice in adding long columns?
 How can we improve our writing?
 How can mosquito larvæ be recognised?
 How can mosquito larvæ be destroyed?
 What would be the cost of treating all standing water on the compound with kerosene oil?
 What report shall we make in regard to the Principal's compound?
 How much does our drug supply cost, on the average, per week?
 Can we save by buying some drugs in quantity?
 How can we make our "Project Book" more attractive?
 What can we send to the class in America who sent us their illustrated booklet on a Cotton Project?
 How shall we make a booklet on malaria interesting to children in America? (They finally designed for their cover a huge bottle labelled QUININE and cut the whole booklet the same shape!)

Sources of information used by the class in solving their problems.

- The teacher's knowledge.
 Dr. Mathra Das and his staff who kindly helped in many ways.
 The Government Dispensary registers, accounts, records, etc.
 Hospital buildings observed.
 Missionaries' homes on the compound.
 Experiences of fellow pupils in the villages.
 History of India.

Geography of India.

National Geographic Magazine.

Publications (posters, etc.) of Junior Red Cross, Lady Chelmsford League, etc.

Boy Scout Manual.

Government pamphlets on village sanitation and prevention of epidemic diseases.

Guide to Moga (local publication).

Life, Light and Cleanliness (a Hygiene Reader).

The Treasure Chest (Urdu Magazine).

The Teacher's Guide (Urdu Manual).

The Bible.

Analysis of subject matter covered :—

Oral composition.—Daily practice in discussion.

Reading.—The Government requirement, and much in addition. Emphasis on silent reading.

Writing.—Letters, labels, orders, forms, registers, charts.

Written composition.—Daily records in Project Books.

Arithmetic.—Rule of averages, from measurements of

and America—main parts of India and their location on the map—trade routes—climate and products of various parts of India.

History.—The history of Moga Hospital. By finding out the religions and stations of different patients they learned something of the origins of different religions and who their founders were. What was the method of curing disease in our country in olden times and when did this method begin? What king first favoured English medicine?

Chemistry.—How different medicines are made—solutions of various strengths, etc.

Physics.—Weighing and measuring—reading temperatures.

Botany.—Trees, shrubs, roots, etc., which yield drugs.

Drawing.—Maps, plans, objects used in hospital.

Handwork.—Carpentry, iron work, dyeing.

Play.—Methods of lifting a patient, drill, dramas.

Bible-Texts.—On belief in magic, charms and sacrifice: Exodus 22:18; Lev. 19:26, 31; Deut. 18:9-14; Lev. 20:27; I Chron. 10:13, 14; II Chron. 33:6; I Sam. 28:1; 15:22, 23; Is. 8:19; 19:3; Mal. 3:5; Acts 13:6. On giving: Acts 20:35; I Cor. 16:2; II Cor. 8:7; Mal. 3:10, 11. Our Lord's healing miracles. Persons healed by the Apostles. The life of St. Paul. The Master's teaching on service and sacrifice.

Outcomes in terms of Attitudes and Habits.

Growth in skill in silent reading.

Habit of reading to secure information.

Attitude toward reading (as an activity of real life) greatly improved in the majority of the class.

Habit of approaching school work with alertness and interest.

Habit of seeking information from all available sources.

Habit of planning before executing.

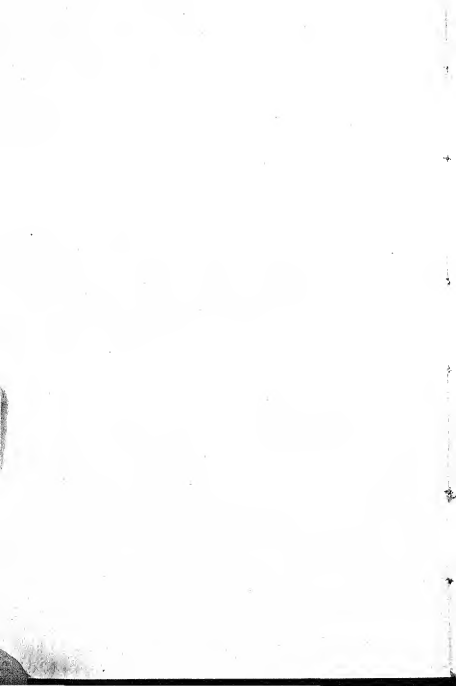
Habit of expressing in speech reasons for action.

Habit of making lists and classifications.

Habit of courteous discussion.
Ability in reporting findings to the class.
Habit of sharing responsibilities and dividing duties.
Attitude of critical judgment of their own work.
Willingness to work hard to improve standards.
Appreciation of importance of arithmetic as a tool
in practical life.
Understanding of the importance of accuracy.
Class pride and loyalty.
Independence and self-respect.
Resourcefulness.
Taking pains to be courteous.
Carefulness in borrowing.
Willingness to sacrifice individual wishes to the class
purpose.
Appreciation of the necessity for perseverance.
Appreciation of the reasons for suffering in the
villages.
Appreciation of the difference between superstition
and the Christian attitude.
Appreciation of the duty of Christian leaders in
regard to health in village communities.
Desire to help others.
Appreciation of the needs of women and children.
Habit of giving their own money for a worthy cause.
Understanding of the principles of stewardship.
Willingness to serve others.
Understanding of the place of prayer in the Christian
life.
Growing interest in health.

Moga.

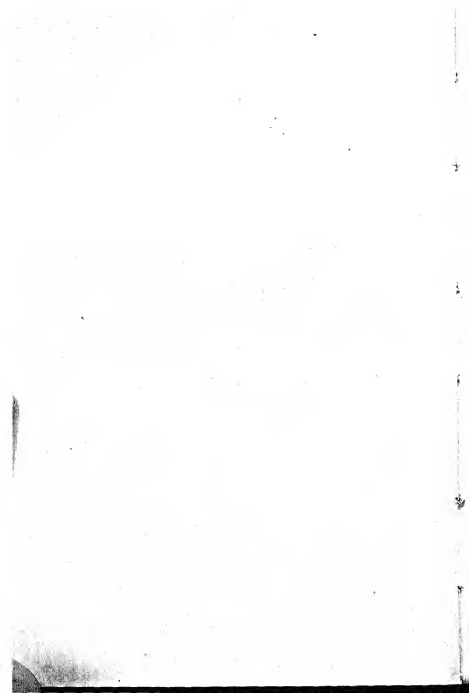
IRENE MASON HARPER.



PART IV

HANDICRAFT PROJECTS

12. THE HAND
13. BUILDING A HOME FOR THE TEACHER
14. BUILDING THE TABERNACLE
15. TAPE-WEAVING IN A VILLAGE
16. A STUDY OF CLOTH-WEAVING
17. SCHOOL GARDENING



XII

THE HAND

KYAUKSE is a small town situated in a rich agricultural district in Upper Burma. This school is a Vernacular Middle School with 164 pupils. Boys and girls study together from the Infant Standard to the Fourth; but only girls are admitted to the three upper standards. An elementary training class for girls is attached to the school, with ten students who get their teaching practice in the first five standards of the primary school. They are all boarders and so are fifteen of the pupils in the school. There is one teacher in charge of the elementary training class.

All the work in the school and training class is in the vernacular, but English is taken as a special subject and taught by a special teacher who is the only member of the staff able to read English. The Kindergarten class and First Standard are large and have one teacher each; Classes II and III, IV and V, VI and VII go in couples with one teacher in charge of two standards. Text-books in the vernacular are improving year by year, but reference books are very scarce and almost inevitably teaching becomes the slavish following of a text-book.

We held a teachers' meeting to discuss possible ways of getting out of the text-book habit. We decided to try the Project Method, and then the question was, "What shall be our project?" Just at that time we were starting industrial work, or, as the Burmese phrase has it, "A School of Handwork". Our thoughts naturally turned to the hand and as we were very anxious that the industrial work should not be looked upon as in any way inferior to that of the ordinary school, various immediate aims suggested

themselves and seemed to point to the choice being a happy and appropriate one.

We saw that the study of the hand and its power might lead us in many different directions, and, as we were conscious that one of the school's great defects was the lack of correlation between the different subjects taught, we hoped that this project would help us in this direction too. But we had no previous experience in the working out of a project; so for fear of the whole thing becoming too vague, we took as our immediate aim the following:—*To help the children to realise that their hands are among their most priceless possessions, so that they may care for them properly and train them to become increasingly useful.*

Each teacher was left to work out the details of the project as she saw fit; the Principal giving only general suggestions as to ways in which the different subjects might contribute to the working out of the main idea. Progress was therefore very irregular, some classes taking up the idea eagerly and applying it to all the subjects in the curriculum, and others finding its connection with only one or two.

It would involve too much repetition to detail the work of each class; but it may be useful to 'pool' the results and give a general outline of the way in which the classes, as a whole, worked out the idea through the various subjects.

Scripture.—Some of the classes devoted the Scripture periods for two weeks to the discussion of ways in which we can use our hands to help others. David was cited as an example of "A boy who had learnt to use his hands". Dorcas was much in evidence. Paul the Tent-maker, and the disciples who went back to their fishing in the intervals of their other work, emphasise the virtue of independence, and relying on one's hands to earn one's daily bread. The fact that Jesus was a carpenter gained a new force and meaning.

Hygiene.—Here, of course, the connection was most obvious. The mechanism of the hand was studied.

Its wonderful adaptability, strength, fineness, etc., were considered. Then came the question of cleanliness, the danger of dirty hands and the habit of biting nails. A campaign for *cleaner hands* was instituted; the pupils were taught to make small smooth bamboo sticks to use as orange-sticks for cleaning their nails, and a daily inspection of hands was made in all classes, with the result that a very great improvement was soon evident.

Arithmetic.—The Kindergarten babies began to learn from their hands to count and add in tens and fives, and slightly older children in the Upper Division added and subtracted in tens and fives, and began to find sense in the multiplication tables. The students in the Elementary Training Class and the Kindergarten teacher invented all kinds of games in which the hands in the class were utilised in the teaching of arithmetic. In Standard I, multiplication and division by fives and tens was also taught through games, and so on up the school, till we find a class demonstrating with their fingers that $\frac{2}{5} : \frac{3}{5} : \frac{4}{5}$, etc., equal $\frac{1}{5}$, and that $\frac{2}{10} : \frac{4}{10} : \frac{6}{10}$, etc., equal $\frac{1}{5}$; and several other rather carefully worked out combinations.

Composition.—This gave an opportunity of expressing the impression that was being built up in the minds of the pupils and it became apparent that two discoveries had been made:—

- (1) Our dependence on our own hands in our daily life, and
- (2) Our dependence on the hands of others.

Geography.—A beginning of the study of industries had been made in considering local occupations, particularly home industries, such as weaving of silk and cotton, the making of baskets and mats, tailoring, the making of fishing-nets, and (perhaps the most popular of all) cigar-making. From this we went on to the study of bazaar industries: gold and silver work and the polishing and cutting of precious stones, with a digression on the subject of the ruby mines

at Mogok; tin smithing and brass work; then carpentry and wood-carving. Here the Seventh Standard spent about a week on the lumber industry, while the Elementary Training Class, approaching the subject from another angle and taking a piece of carved ivory as their starting point, made the elephant the centre of interest in a series of lessons on teak.

The umbrella bazaar in Mandalay, where one can watch the making of the gaily painted Burmese umbrellas in every stage from the preparation of the bamboo framework till the artist puts the finishing touches on to the picture, was described by those who had seen it. So was the making of the pretty Burmese shoes,—an industry which is carried on in Moulmein.

Here, in the study of geography, we came upon our third discovery: that life eventually depends on the producers of food; that the often-despised worker in the fields may be more important than the clerks in the offices! This was a good point from which to start our study of the crops raised round Kyaukse and in other districts known to the children. The various crops and their uses were discussed; the methods of cultivation employed in different districts were described, with methods of irrigation. Then came the steps by which various crops are prepared for consumption—the work in rice-mills, oil mills, etc. Then came our fourth and last discovery,—namely that we are dependent not only on the workers of the country in which we live, but also on the workers of other countries. This brought us to the last stage in our work, the study of World Commerce.

The course in geography, as outlined, is not by any means ideal. In actual practice the teaching was still less so. Some points of great importance were merely touched upon. Several industries, local or provincial, were not even mentioned. But there were some points that seemed to compensate for the defects; the sequence of study was a natural one, and full scope was given to the knowledge that the pupils had gained by their own observation. The whole

course was, indeed, based on this knowledge, and books, maps, etc., were used to supplement it.

In considering the Project as a whole it must be borne in mind that it was a *teacher's* Project; for the original problem out of which it rose was a problem of the teachers, not of the scholars. We sought for some means by which we might get free from too close an adherence to the text-book and by which we might more satisfactorily correlate the different subjects which we teach. Looking back over the work it seems that we have found that for which we sought. No doubt there were many faults in details of its working and many opportunities of interesting development were probably lost, but we have gained some insight into the way in which the study of the different subjects along such lines leads on from one thing to another and we are anxious to do more work on similar lines.

So far as the immediate aim towards which we directed our teaching is concerned, here also we seem to have achieved some measure of success. That aim was: *to help the children to realise that their hands are among their most priceless possessions so that they may care for them properly and train them to become increasingly useful.* Certainly they have realised in a new way the value of their hands and the potentialities that lie in them. They keep them cleaner than formerly. The nails are in better condition and they seem more interested in all kinds of hand-work.

In the question of learning to use their hands in different kinds of work, the classes have had their opportunity to develop their own little projects within the circumference of the bigger one.

All classes have done some gardening, but Standards Four and Five with their teacher, have shown special interest in this subject. Seeds are given by the Education Department through the Deputy Inspectors of Schools, but as we have not many tools and these two standards are very eager to have better ones, they are carefully tending their plots with the hope that the

profit gained by the sale of the produce will suffice to buy the tools which they want for next year.

The garden has furnished the materials for the Nature-study of these classes throughout the year, and in spite of the fact that the river which runs at the end of the school compound had exceptionally high floods this year and carried away nearly a third of the ground they were cultivating, their energy and enthusiasm have not abated. On their own initiative they are using their garden as an open air classroom, and a great many of their lesson periods are spent there. This seems to show a real gardener's love for the garden he has made, and gives one even more encouragement than the rows of healthy cabbages and the bright plots of flowers amongst which they work. This love of working out of doors is not, so far as my experience goes, a common thing among Burmese children. The little ones certainly love to go outside for their lessons, for to them the garden is always suggestive of play; but the bigger ones soon tire of lesson out of doors. Generally they do not want the trouble of taking their books out and they are more "comfortable" inside. These classes however have been working largely out of doors for some months now and they appear to enjoy it more and more as time goes on.

Drawing and Paper Cutting.

Very little has been done in this school to develop the artistic ability which so many of the Burmese children undoubtedly possess. This year we have paid a little more attention to drawing and paper-cutting, and though no very remarkable results have been achieved several of the pupils have shown a certain amount of ability in these directions. The Second and Third Standards have made silhouette friezes mounted on thick brown paper for the decoration of their classroom. (The examples I have chosen to illustrate this paragraph are typical of the work of a boy in the Third Standard.) They were asked

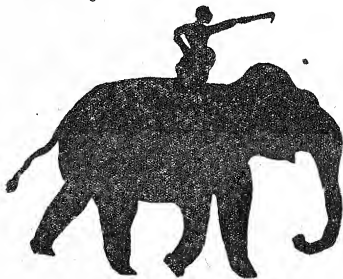
to make "cut-outs" for a frieze on "Our Village" and given a perfectly free hand. Elephants are not often seen in the villages of the Kyaukse District, but they were among the most popular of the objects chosen for portrayal. Perhaps this may be accounted for by the fact that one of the oldest legends of the



Paper "Cut-outs" for the Schoolroom Frieze.

neighbourhood concerns a prince whose mother, shortly before he was born, was carried by a huge bird and put on the top of a large banyan tree at the foot of a hill a mile or two away from this school. There the prince was born. The sovereign of the Nat Realm succoured the unfortunate mother and child and gave the baby prince power over all the elephants in the jungle. Whenever he played on a certain musical instrument they would all hasten to him; whatever he said to them they would understand, and whatever

orders he gave to them they would obey. Hence all manner of stories and local customs centre round elephants, and though few of the children may have seen a real elephant outside the circus, they have all seen the very clever plaster representations that are brought in by the villagers and people of the different quarters in the town and used in the annual Elephant Dance, which is a local addition to the usual festivities at the end of the Buddhist "Lent". So, in view of local traditions, we allowed the elephants their place in "Our Village".



Paper "Cut-outs" for the Schoolroom Frieze.

House Cleaning.

Another very popular, and certainly very useful activity was *House Cleaning*. Half-way through the school year the lower panels of the classroom walls needed a fresh coat of whitewash. In previous years the school *durwan* has been employed to do this work,

but this year I asked the Fourth and Fifth Standards to whitewash the Kindergarten room as a piece of practical work in connection with their hygiene lessons. I showed them how to get to work and left them to it. For two delightful days they applied whitewash to the walls and linseed oil to the woodwork. They washed all the furniture with phenyl and water and polished it with a furniture polish of their own making. They washed the floor most carefully and all the windows were cleaned three times over at the very least, till finally they shone as I think they had never shone before.

Having made another classroom thus resplendent, they asked leave to treat their own to the same renovating processes. Needless to say permission was granted, and another cheery day of cleaning made their room a rival to the Kindergarten in its splendour of cleanliness. By this time a very epidemic of cleanliness had descended upon the school. Before the week was over every corner upstairs and down had been turned out, every window was shining and every polishable thing had been polished. And the best thing about it all was that, after the first suggestion was made, they did it all because they wanted to, not because they had been told they must.

Kyaukse.

MURIEL HOLLINSHER.

XIII

BUILDING A HOME FOR THE TEACHER

THE Shahdara Farm School is a very new and very small school situated about six miles from Lahore. The largest thing about it is its list of needs, and most of the things the children do are done to help meet these pressing needs. They have not enough money to pay for food and clothes, so they have to help produce rice and wheat, vegetables and milk, sugar and cotton. They learn to cook, sweep, sew, wash clothes and do all the work that is connected with every-day living. The equipment and buildings are inadequate and they have to make the best of their cramped quarters. The bit of purposeful activity which I shall describe has to do with meeting a need for a house.

The children of this school, as I have said, work in the garden helping to produce vegetables for themselves. In addition to the common garden in which all work each child has a plot of his own. He may plant what he likes in this plot. He pays for his seeds and sells his vegetables. They are more interested in gardening than anything else and want to learn all about it. During the first year of the school's existence the services of a teacher trained at Moga were secured. This arrangement made the children very happy, for they knew he would be able to help them with their gardens. There was no house for him at Shahdara and he was obliged to live in Lahore, coming and going on the train. The time for garden work was in the morning and in the evening and the children were disappointed to find that the new master could not be present when they most needed his help.

One day they came to Miss MacDonald with their troubles. They said, "Now we have no one to teach us gardening. Before the master came from Moga, you used to work with us and show us how, but now that he has come you are busy with other things and

he cannot be here at the time we are working in the garden."

Their proposal was that if she would buy bricks for them they would build him a house themselves. The master had said he could live in a small house and they were sure they could build one big enough for him. Miss MacDonald replied that there was no money with which to buy bricks and though she too was anxious to have the master living near she could see no possibility of such an arrangement for the present.

They left disappointed but not discouraged, and immediately began to think of ways around the difficulty. Miss MacDonald had had bricks brought to build a school kitchen. Up until this time the cooking had all been done in the open, but now the warm days had come and there were rains to think about. They had been delighted with the prospect of having a kitchen and there had been no thought of the possibility of getting along without one. Now they began discussing among themselves whether it was better to have a kitchen or a house for the master. After much consideration they decided that they could do without a kitchen for the present, but that the master's house *must* be built. They said they would hold a blanket over the cooking place if the sun was too hot at cooking time. It didn't rain often, and when it did they would somehow manage.

They came back to Miss MacDonald with this new proposal that she might allow them to use the bricks intended for the kitchen to build a house for the master. Miss MacDonald thought the building of a house big enough for the teacher and his family a large undertaking for children, and she pointed out the difficulties; but they were not to be discouraged and insisted that the master needed a house and that they were willing to build it for him. So she finally gave her consent and they began making plans.

First of all they had to select a suitable place. In consultation with Miss MacDonald and the master they considered all the possible places and decided

on a site across the road from the other buildings, but not so far away as to be lonely. They decided to make it far enough from the road so that there would be room for a small garden in front and a place for the children to play. They decided to build the front of the house toward the east, as that would make it face the road and the other buildings as well.

They wanted to begin building at once, but it was pointed out to them that they must have a plan both in mind and on paper before starting to build. The contractor showed them his plans and told them that they could not show the actual size of the house on paper but that they might let an inch represent a foot in drawing their plan. This was a new idea to them and they spent some time in learning to draw plans to scale. At last they produced a neatly drawn plan for a one-room house with a verandah, two windows, and a door.

They thought that now, surely, they could begin laying bricks so that there would be something to show for their work; but again they were stopped because the lines they had measured were not straight, the corners were uneven, and the building would not be in line with any of the other buildings or the road. They found that they had much to learn about measuring. They were surprised that in this work which they thought would be done entirely with their hands they were learning so much arithmetic.

After the plans were drawn and the measuring done correctly, at last they were ready to begin building. They had watched the other buildings going up and had a general idea of how to do it, but when they decided to build a house themselves they began to pay more attention to details. The buildings were all partly built by this time, so they could not watch how the foundations were laid, but by asking many questions of the contractor and Miss MacDonald they learned how to do it, and with the master's help started the real work on the house.

The first days were great fun. The work was new

and interesting and there was something for each to do. It was a happy moment when the first bricks were laid and all—both boys and girls—worked hard and untringly. They had their difficulties when it was time to leave spaces for doors and windows, but these difficulties were surmounted and everybody worked happily. But by the time they reached the tops of the door and windows it wasn't so much fun as it had been in the beginning. The work was hard now and every day it grew more tiresome. Some were ready to give it up, leave the house unfinished, and even do without gardens if necessary. Clouds were appearing on the horizon and they learned that if they didn't get the roof on before the rains came, the part of the walls already built would probably fall down. With a great deal of urging and encouragement from the master, and will-power on the part of all, the walls were finished. The making of the roof provided a change, and from here on the work was continued with great interest and brought to completion.

After the house was finished and the master was living in it, the children were glad that he had not allowed them to give up the work when they got tired. They take great pride in showing people this house. To them it is the most beautiful building in the compound, and they have just reason to be proud of it. The building was so well done that the house stood undamaged in a flood which came the next summer. The roof has never leaked—a fact in which they have much pride.

Because of the largeness of the undertaking and the children's weariness in building walls, some of the teachers feared that interest in building would be lost for all time; but a year afterwards, when the cold weather came and there was no place for the donkey to stay at night, again they asked whether they might build a house. This time they knew how to start, and did most of the planning themselves.

Shahdara.

EVA J. SMITH.

XIV

BUILDING THE TABERNACLE

Purposing.

DURING the year 1927-1928 our training students at Guntur studied the book of Exodus in their class. The strength of the class was 35, of whom 30 were Christians and 5 were Hindus. The first part of the book was very attractive to everyone and they listened to the story of the people of Israel with much interest. But the trouble began when we were reading the last part of the book. Chapters 24-40 were not at all interesting to most of the Christian students. But somehow the Hindu students were immensely interested in the detailed descriptions given by God to Moses regarding the Tabernacle, the Ark, the Mercy-Seat, the Altar and the Table; probably because these descriptions were similar to what we usually find in their temples. The Hindu students were only a minority. Practically all the Christian students were inattentive while the descriptions of the Tabernacle and of its furniture were being read and explained in the classroom. Some of them said, "What is the use of reading these chapters? These are of no concern to us!"

How to get all the students interested in reading the chapters 24-40 was a problem to me. Here was a real situation and a real difficulty. The solution of the problem was our project for the remaining part of the year.

There was a picture of the Tabernacle pasted upon one of the four walls of our classroom. Frequent reference was made to it while we were reading the descriptions of the Tabernacle and of its furniture. But when the problem of "How can we get all the

students interested in the descriptions?" arose in my mind, I had to think for a day or two as to what might be done. Then, I came to the conclusion that the whole thing must be turned into a *Constructive Project*.

The pupils and students of the whole school were carrying on a Major Project,—preparing several objects for a school exhibition. Several nice models of clay, of cardboard, of wax, of paper and of palmyra leaves had been prepared. A large room was set apart and labelled "The School Museum". The room was artistically decorated with pictures and drawings, and was well furnished with the models and articles prepared both by the pupils and the students. I knew that they were always eager to get new suggestions for the improvement of their museum for the school exhibition.

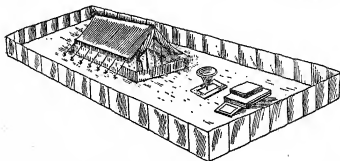
One morning, during the Bible hour, I suggested to my class, "How would it be if we make a model of the Tabernacle, of which we have been reading, and keep it in our museum for the school exhibition?" I found at once some new life in the classroom. Several of the students sat upright and asked me many questions, such as, "Of what shall we prepare the Tabernacle?" "Where shall we get cardboard and paper?" "How large shall we make it?" "Do you want everyone of us to make a Tabernacle?" "May we go to the Roman Catholic Church and see for ourselves what the ark, candlestick and so forth look like?"

The whole class was thus thoroughly aroused by the suggestion; for everyone of them wanted to have a novelty like this for their exhibition. Therefore the construction of the Tabernacle and furnishing it with the ark, the mercy-seat, the table and the altar became a wholehearted purposeful activity.

Planning.

There was a good deal of discussion and questioning on how to set to work, what should be the scale, and

how to get all the furniture of the Tabernacle made. Then the following decisions were made: "We shall make one large Tabernacle and its court"; "We shall make everything with cardboard and paper"; "Let the scale be one inch to three cubits"; "Let us divide the class into as many groups as we have articles to make and hold each group responsible for a particular thing which they volunteer to prepare." They decided that each group should make one of the following:—The ark, the mercy-seat, the tabernacle,



the table, the altar of incense, the altar of burnt offering, the candlestick, and the brazen laver; while another group was to furnish the tabernacle with the articles made in their respective places. I asked the class, "Who would like to make the tabernacle?" "Who would like to make the ark?" and so on; and the students volunteered according to their own interests. Cardboard and paper and other necessities were supplied to them, and the dates were fixed on which the furnished articles should be presented.

Executing.

The students set themselves to prepare the articles according to the plans decided upon. Each group consisted of about three students. What did each group do? They took their books of Exodus and went on the verandahs, or under the trees near the school

building. They read the portions prescribed for them, noted the important points, compared their notes, worked out the scale to be used in making their articles, took cardboard and paper to make them into an ark, a table, an altar, etc., in accordance with the instructions given in the book of Exodus.

A sample of their notes is here given :

The Ark : Exodus 25 : 10-16, and 37 : 1-5.

1. Material : acacia wood.
2. Dimensions : length, $2\frac{1}{2}$ cubits ; breadth, $1\frac{1}{2}$ cubits ; height, $1\frac{1}{2}$ cubits.
3. Scale—one inch to three cubits.
4. Instructions for its preparation :—
 - (1) Overlay it with pure gold within and without ;
 - (2) Make upon it a crown of gold round about ;
 - (3) Cast four rings of gold for it and put them in the four corners thereof—two rings on one side and two rings on the other side of it.
 - (4) Make the staves of acacia wood and overlay them with gold.
 - (5) Put the staves into the rings.
 - (6) The staves shall be in the rings of the ark. They shall not be taken from it.
5. What is the ark for ?
 - (1) To keep the testimony of God in it—the two tables of stone ;
 - (2) To keep the golden pot that had manna ;
 - (3) To keep Aaron's rod ;
 - (4) This meant the Presence of God.

Judging.

Every article that was completed was brought into the classroom and placed on the table. They were examined by the whole class and criticism was passed on each. The candlestick, for example, was not made to scale. Hence the group that made it was asked to make another one more carefully. No pressure was used in getting the articles made. The only discipline used was the united approval or disapproval of the class. All the articles, after being examined by the class and the teacher, were given to the group

whose duty it was to arrange them in the Tabernacle and its court in their respective places.

A. Possible Criticism.

A possible criticism that might be made on this project is that each group of students needed to read only the portions prescribed for them, but did not learn anything about the other portions of the book. To get over this difficulty every group was asked to explain to the class the work that they had done in preparing their article. In reporting their work they tried to be as practical as possible and explained their work with the help of pictures, which they drew on the blackboard. Their dimensions were marked. How they were made was explained graphically, because they had learnt it all by doing. Thus every member of the class had an opportunity to learn about all the articles in a very interesting manner.

Some Observations.

1. The students read the Book of Exodus several times to get an accurate description of their article and to understand its purpose.
2. They had an opportunity of telling their classmates what they had done.
3. There was good co-operation amongst all the students; for while everyone prepared an article, the combined work of all the students formed the Tabernacle.
4. It was done with interest, for they had a purpose in carrying out the project. That purpose was to keep an artistically-made Tabernacle in their school museum.
5. The teacher used no pressure in getting the project carried out to its completion. The only discipline used was the approval or disapproval of the class.
6. The teacher was only a guide. He did not force his ideas on them. The students did everything themselves and did not depend upon the teacher for help.

7. Before the Project was begun there was a good deal of thinking, and planning was done in the classroom.
8. In carrying out the discussions or planning project, the teacher acted as chairman, and the students as members of a body in which everything was carried through on democratic principles.
9. Students worked at their Project not only during the school hours but outside of school too. Indeed, they put more of their leisure-time on this Project than of the regular time set aside for Scripture period.

Tarlupad.

S. BHUSHANAM.

XV

TAPE-WEAVING IN A VILLAGE*

The Background.

SURROUNDED by palmyras like tall feather dusters and by fields that raise dry crops, lies the hamlet of Surankuppam. The barren hills to the north rise in masses of weirdly shaped rocks. A few miles to the south is the Milk River, the Palar, a stretch of sand in which water is rarely visible. Further south is a circle of rugged mountains rising nearly 3,000 feet. All the people of the hamlet have become Christians. They own land and are less in the toils of grinding poverty than other Christians for miles around. The 'ubiquitous Ford' can wind its way over the fields to this cluster of mud houses about a mile from one of the main roads of the North Arcot District.

To the north of the settlement on a slight rise of ground is the mud-walled thatched school house run by the Arcot Assembly. The school serves not only the Christians of the hamlet but also Hindus in the surrounding area. Many of the boys and girls regularly walk to school six days a week as far as one or two miles, which is very far for elementary school children in India. Why do they trudge so far? Not just because they have no schools of their own, but mostly because they and their parents know that the school is teaching what they want to learn, and teaching it well.

The present schoolmaster and his wife have built up the school by their intelligent and enthusiastic labours. The man is an untrained but moderately

* The materials for this article were gathered by Mr. John Wesley Manickam, Supervisor of Schools. I have also visited the school several times.—M. O.

good teacher having a Government certificate and very clever in weaving and in the making of baskets, bricks and tiles. His wife is an even better teacher and has had regular training. She is also very good at school management and gardening. Both of them have had long service and have received much encouragement and guidance from the mission school supervisors.

The building is very small for the 65 pupils, but an extra shed has been erected. On every side it is surrounded with a beautiful school garden in which flowers, vegetables and groundnuts are raised. The children and teachers have made this the loveliest school garden that I know of in India. They gladly carry water for their loved plants from some distance. In front of the school is a plot of land that serves as a school playground and a place for community meetings.

Introducing Projects.

A few years ago the attendance was small, and nothing was taught except a narrow range of book lessons. As need and opportunity arose, various pre-vocational activities were added one by one. These aroused the interested participation of the children and thus they became Projects. When teachers are alert in using simple occasions, a Project is the most natural thing in the school. It arises from life; it is not introduced as something foreign. If so, it would not be a Project, for a Project is intrinsic to the life of the learners. A Project can never be transplanted bodily from Moga or anywhere else. Suggestions may come from the outside but the nature of the activity must depend on the local setting. Nor are Projects usually beyond the means of the school. They utilize human resources and local materials. If a piece of work is highly expensive, it probably does not fit the village school and is not a Project for that school. Excursion projects require no money at all, and those utilising village materials require almost

nothing. They do greatly err who postpone introducing any Project until large funds are in hand.

In Surankuppam, the first Project was the making of sun-dried bricks and tiles. Good clay for this was available on the spot. The teacher had some knowledge of brick-making and could construct the moulds. From this beginning came the building of a model house, together with lessons in the sanitation of the house and its surroundings. This aroused the villagers to a desire and plan stimulated by the visits of training students and others, to remodel their houses. Mr. J. J. De Valois, an agricultural expert, is at the same time showing them how to build good pits for storing cattle-manure without losing (as at present) most of the precious fertilizer. This illustrates the way that one activity naturally leads to ever broader activities. Writing the story of a Project is like writing the history of a nation—many strands must be kept in mind at once. No happening is isolated, each is one of a chain starting in the past and stretching to the future.

A year ago, the children learned to make baskets and mats of various kinds. Recently, in order to encourage the pupils and teachers in this work, Mr. De Valois for three rupees has bought two dozen baskets in which to keep eggs and ship them from his agricultural school. A training-school teacher also ordered two dozen mats. These orders gave the children the satisfaction of knowing they were doing something useful and rendered them keen for more projects. They also gained two and a half rupees from their groundnuts.

The lessons in hygiene led to the children's desire for combs, mirrors, and clay pots for washing and drinking water. The older children also bought simple medicines from the Vellore Medical School roadside dispensary and gave them out. They also wanted to get drums and other simple musical instruments so as to help with the singing at community meetings and religious services. They asked themselves how to

raise money for these purposes. They decided to sell the vegetables from their garden in the local fair. By this and through other means, they realised nearly ten rupees, which they accounted for and gave to the teacher. The supervisor suggested that the money be invested in the postal Savings Bank at Katpadi seven miles away. From this the children are learning about such a bank and how to lay up money and keep it safe.

The Weaving Project.

The teacher, who has been trained in weaving, asked the boys whether it would be a good thing for them to learn tape-weaving. At first the boys did not understand what it meant. When the teacher explained what tape-weaving was and that it would be a useful occupation by which they could earn money, the boys said that they wanted to learn it. Thus the teacher's proposition became the boys' Project. As they realised the advantages of tape-weaving and their need for it their purpose to do it became stronger day by day.

So much for the purposing. Next came the *planning*. The children with suggestions from the teacher discussed the best place for doing the weaving. Knowing that it would have to be done under shelter and finding no better place, they decided on the school building. They also chose to have a period each for the third and fourth standards for this work and also to weave before and after the regular school sessions. The next question was where to get the materials for making the simple loom. They found the necessary bamboos and pieces of wood and string in the village. The teacher bought a weaver's reed, the most expensive part of the loom, which determines the closeness of the warp and beats the weft into position. The problem then was how to get the yarn, as neither the children nor the teacher had money to buy it. They kept asking the teacher to obtain the money in some way. Finally he found out how much yarn was necessary

for the tape of a single cot and the cost, and asked me for it. I gave him Rs. 5—4—0 from village school funds and he bought the yarn from the Central Jail in Vellore. I confess it would have been far better from a Project point of view if the children themselves had found the cost and raised the money, instead of the teacher doing so ; but this is a description of what happened, not of what *should* have happened ! We may note here that in planning for any kind of Project, whether a producer's Project like tape-weaving or any other, various problems arise. If the children wholeheartedly enter into their solution, Problem Projects are seen. These may be exceedingly valuable in the stimulus they give for thinking by the children and in the facts which the children must know in order to solve them.

After planning for the Project, came the *execution* of it. With the teacher's help the boys made ready the yarn and planted the bamboo poles. He showed them how to weave the tape, not a very difficult process. Then the boys rushed to the loom shouting, "I will try next !" "Let me do it next !" They were so eager, that the teacher had great difficulty in controlling them. One boy after another had his turn in learning by practice how to weave. They had great satisfaction in what they were learning and a strong desire to learn and do more. School attendance became more regular and prompt, even though many of the boys had to walk one or two miles. Several boys came very early in the morning, long before school began, secured the key from the teacher and worked industriously at the loom. The length of the tape increased day by day under the eager hands of eight boys and three girls. Their interest grew as they saw the tape grow. In the course of learning, many mistakes were made, which the teacher showed them how to rectify. He also taught them how to mend the yarn when they broke it. In the first three weeks the children in the third and fourth standards learned how to weave. They had finished forty yards of tape.

The work had only whetted the children's appetites for doing more. They kept asking the teacher for more yarn to begin again, but he had no way to buy yarn until he had sold the finished roll of tape. He brought it to me and I sold it to a lady missionary from Nellore. The proceeds were just enough to provide yarn for two tapes. This was bought at the Jail by the teacher's son, a student at our Union Teachers' Training School, and taken by him to Surankuppam. The boys and girls, on hearing of the gain from their labour, started weaving again with renewed interest. They told the teacher that they must finish the second roll quickly and send it to me for sale, but the orders for baskets and mats slowed up the work on the tape. In twelve days they had only finished twenty-one yards.

The final step in a Project is to *judge* its strong and weak points. A clear evaluation of past experience is a useful guide to the future. The boys themselves saw how useful was their learning of tape-weaving. They realised that they could later do the same work in their own homes and thus earn some money. From these ideas they received satisfaction, which made them busier than ever and more enthusiastic in perfecting their craftsmanship. The attendance considerably improved. Beforehand, the boys left for their homes in the neighbouring villages just as soon as school was over. Now they ask permission of the teacher to stay behind in order to weave a few extra feet. Even in the holidays the older children come for handwork. The boys and girls have been greatly encouraged when visitors have praised their work. Many people have come not only from the locality to visit the school, but also from Madras, Ellore, and more distant places. Over twenty graduate students of education from the Mysore University were much impressed with what the teachers and children were doing. We also sent all the men of our teachers' institute to see the work. When such persons from a distance buy articles that have been made or raised, and speak well of the work, the children get very keen

satisfaction in what they have done. This forms an incentive to other similar projects.

Is it worth while?

At this point your mind may be alive with pertinent questions: "Is the value of Projects great enough to outweigh the time and effort that they demand of the teacher and supervisor? Are they worth the expense that is sometimes involved? How do they affect the other parts of the curriculum? Is the project method just a foolish fad for the few, or is it an approach that can be adapted to any school?" If you have any such questions in mind, the outcomes of the tape-weaving project may help you in answering them.

Let us first examine the bearing of this Project on the conventional school subjects. The supervisor and children together discussed the best kind of soil and conditions for cotton. The children learned something about the districts in the Southern and Deccan Divisions of the Madras Presidency where cotton is extensively grown. They also took up the suitability of varied places and conditions to different kinds of common plants. Next, facts about the gathering, ginning and spinning of cotton and the people who do these processes were considered. The price of yarn was also discussed. Thus a piece of yarn became the starting point of much geographical and civic understanding. In this case, there was room for more thorough teaching than was actually given. Such instruction might better have been given by the teacher than the supervisor, for the teacher being always there is in a position to give a more connected view of things. A point to note is that children are much more interested in learning about concrete objects they can hold in their own hands than about distant, abstract entities described in a book. The children's activity also is a starting point for investigation.

Arithmetic was something else that the children learned, for they kept account of what they had earned from their various Projects. Accurate accounting is

one of the important ways in which we use numerical processes in life. The accounts gave the children a strong life motive for being correct in their work. The necessity of honesty in business dealings was also clearly pointed out. They deposited the money in the post office. The school monitors also sold post-cards and stamps and covers to the villagers. Thus the children began to gain practical experience with the postal system, which has important bearings on the children's civic training. Some well-learned lessons in personal hygiene and village sanitation have already been mentioned.

Do schools exist mostly to impart information, or for some greater purpose? Which are the more important, school-lessons which village children soon forget, or lessons in character and citizenship that abide? Well conducted Group-Projects do much more for character than individualistic study where each child is trying his best to defeat some one else. Aggressive competition is a bad habit. We have found that the children at Surankuppam are learning a spirit of helpfulness and are realising how easily they can accomplish a piece of work by mutual co-operation. They have grown in patience and consideration. What lessons are more needed than these in India to-day? The children also found how to work industriously with a will. The Projects seem to have made them more alert in mind and stronger in body. They are readier to give helpful suggestions and plans. Their education in thrift has been begun, about forty years earlier than is usually the case! We cannot report as much progress during the course of the Project as we would like, but it is a move in the right direction. This school is now the best village school in the pastorate and one of the very best in the Assembly area.

A new relationship is growing up between teachers and pupils. The two teachers are coming to be guides rather than master and mistress. They do not dominate but help the children to help themselves. The school atmosphere is changing, and the change is both

the condition of good projects and also the result of projects. Let me quote the report of the supervisor: "Most of the elder boys suggest some Project and the teachers give them permission to carry it out according to their own plans, correcting here and there the common mistakes made by the pupils. Sometimes the teachers deserve much sympathy and patience when the children continually make the same mistake. Both the teachers and the children are always on the quest for new Projects, and the children are busy doing things in groups. Since the teachers have funds of knowledge in various village industries, they guide the children by giving information and suggestions." This is written about two teachers, one of whom is untrained and used to be badly in a rut, like so many village-teachers.

I have heard of parents strongly objecting to anything but book-work, taught in the same way they were taught. They echo the sentiments of the Negro 'spiritual':

"Gim me dat ole-time instruction,
It's good enough for me;
It was good for my ole father,
It's good enough for me!"

Some villagers feel that way about the old methods, but not in Surankuppam. Let me quote again from Mr. J. W. Maniekam: "These villagers like such Projects more than book-learning, because they know that this training will be very useful to the children in their livelihood and will make them more independent. For these reasons, the parents urge the children to go to school regularly and learn carefully. When the children began to learn these things, the parents themselves watched how they picked it up, encouraging the good learner and scolding the slow one. The parents were very happy when their boys finished the first roll of tapes." The children of caste Hindus gladly attend this Christian school and take their places by the side of the Christians without any distinction, even though caste prejudice is still strong

in these villages. This change of feeling is in line with the Project spirit of co-operation.

If such Projects can have a measure of success in Surankuppam, why not also in other out-of-the-way hamlets? The obstacles to education in villages are so immense that we should utilise every possible resource, but how little do we now utilise the inherent tendencies of the children! Projects are a way of using children's instincts and abilities to the best advantage. They go with the grain, instead of against it. I only hope this account may lead others to solve some of their school problems in the only way they can be solved—by actually experimenting under local conditions.

Vellore.

MASON OLCOTT.

XVI

A STUDY OF CLOTH-WEAVING

WE were in charge of a girls' boarding school in Udapiddi, Jaffna, Ceylon. We wished to revise the curriculum and method of the school so as to bring the needs and movements of home and community life more into the life of the school. One hour a day was set apart for activities immediately connected with the needs, interests and improvement of the home lives of the children. We termed these activities the "Home Life Studies". We decided that certain large life-interests could be considered by the children of the various standards, with the reasonable expectation that fruitful Projects could be developed within them. These interests were:—

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| IV Standard. | —Planning and Building a House. |
| V | —Furnishing the House. |
| VI | —The Clothing of the Family. |
| VII | —The Food of the Home. |
| VIII | —The Care and Training of Little Children. |

We believed further that we could find connections, correlations and starting-points for Projects within the various "subjects" of the curriculum,—arithmetic, geography, hygiene, etc. The "Home Life Studies" themselves would not only furnish directly many activities which would develop skill and information in arithmetic, geography, and so forth, but would also suggest some studies or projects in these subjects which would be carried on concurrently with the activities of the "Home Life Studies".

The following description deals with the activities of the sixth standard, springing from a consideration of "Clothing the Family" and leading on to a cloth weaving Project.

The girls of the school made their own clothing while in school. In the discussions of the buying of the needed cloth, a natural introduction to this Project was found and the Project developed as the needs and interests of the pupils pointed the way. The project of the second year differed from that of the first year in the same standard. The Project really consisted of a number of small projects,—activities which the students, with the teacher as guide and helper, purposed, planned and carried out. In the following outline-description we shall follow the actual course of these activities, but I shall not hesitate to include suggestions which indicate further possibilities, which we saw but did not actually pursue at the time. To be really useful, descriptions of Projects should point out the possibilities which were seen at the time the activities were going on; though the children's interests will determine which shall be actually chosen, and also the order in which they will be undertaken. It is entirely possible also, and desirable, that a new line of endeavour not considered in the outline will be opened up. The experimental approach is essential. Teacher and pupils together set out to find out things, and to engage in new experiences.

There would not be space here to describe all the activities which developed in connection with this Project, but only to indicate the progress of the main series of activities connected with the study of the weaving process, and a few of the developments from these.

I. The first question that arose was : *How are Threads woven into cloth ?*

(a) *Origin*:—The pupils had visited the cloth shops to purchase cloth for making their own clothing. This was connected with the sewing projects in which each girl sewed a garment for herself. The various kinds of cloth used for clothing and the prices were discussed. Samples of cloth were brought in and compared. Silk, cotton, woollen and linen samples

were examined by unravelling the threads. Charts were made by pasting specimens of various kinds of cloth on sheets of cardboard and labelling them. In connection with this activity, the pupils unravelled some samples and discussed the question how these threads were put together. Were they always put together the same way? How were patterns woven in? The class decided to experiment for themselves in the method of weaving.

(b) *Progress* :—Individual experiments with warp and weft. (The 'warp' is the arrangement of threads running lengthwise of a piece of cloth; the 'weft' those running crosswise.) Pieces of stiff cardboard about 18" by 14" were obtained and prepared by making notches in both ends to receive the warp. The cards were accurately measured with the ruler and the 14 inches divided into parallel lines, a quarter or half inch apart, at which points the notches were made on the edges of the cardboard. Jute-cords bought in the bazaar were used for the warp and were wound firmly into the notches. Strips of white and coloured rag half an inch wide, were used as the weft, to weave over and under the jute strings. The strips were used to their full length, and then the end was tied to another strip and the ends of the knot neatly cut. Some of the girls wove in red and blue-coloured strips and made stripes. The problem of keeping the edges from pulling in was met and solved by some by tying the end strings on either side of the cardboard together by means of cords, thus preventing them from being drawn in. With this cardboard loom, weaving can continue on both sides of the cardboard, thus making a longer piece; or it could be continued around the edges of the cardboard making a bag. The progress of the work was compared in class from time to time and suggestions were considered for improvements. When the weaving was completed the warp-threads were cut a short distance away from the final weft-threads and tied together by twos over them to prevent unravelling.

(c) *Results* :—The girls judged the products, on the basis of "firmness of weave", beauty, and usefulness. Some had much better success than others. Some had got their stripes regularly spaced and nicely arranged with respect to the finished pieces. Others had theirs in a jumble. This was the first trial, however, and was expected to show up the better and worse methods. The pupils learned the method of a weave, and they gained considerable practice in measuring accurately and dividing a whole number by fractions. The costs of the cards and cloth pieces were calculated and the time spent in doing the work was noted. Some girls worked much faster than others and showed more aptitude for this kind of work. The girls were pleased on the whole with the results. An excursion was planned to visit a hand-weaver's house in the neighbourhood.

II. The next step was, *to make a Simple Weaving-Frame.*

The experiment with the cardboard looms was undertaken to find out the method of the weave. This led to an excursion to a weaver's house, and it was proposed to experiment next with threads strung on a frame, in order to make some small pieces of real cloth. The pupils entered into the Project heartily and began to plan the frames.

After deciding the size of the piece of cloth to be made, each pupil drew a plan to scale on paper, showing exactly how the frame was to be made. Pieces of wood from pine and dealwood packing-boxes were supplied. Rough sticks or bamboo rods tied together at the corners, could be used and the process carried through in more primitive fashion.

The frames in the first year were small, about 14 x 18 inches; but the next year they were about 20 x 28 inches. The frames needed to be four or five inches larger each way than the size of the finished piece. The girls measured out the strips which would be needed, and sawed them from the boards, planing

and smoothing them and cutting them to proper lengths. The first year the ends were simply nailed across the side pieces. The second year a "half-together" joint was made and a corner-brace put across. The pieces were about 2 inches wide by half-an-inch thick. The children worked in pairs in making the frames, choosing their own partners.

When the frames were finished the pupils measured off on each end lines to show the position of the warp-strings; and try-squares were used to mark the lines. These were from $\frac{1}{2}$ to $\frac{1}{4}$ inch apart. A simple way of making the lines more accurately and with less labour is to take a piece of screen of the proper-sized mesh and lay it across the wood and hammer the impression into the wood. By using a fine awl, holes are made on each line, in 'staggered fashion', so as not to split the wood, to receive small brads which were nailed in to receive the warp-threads. Another way of doing this is to make notches with a knife, and wind the warp-strings over the edge of the end-sticks. In this case, it is necessary to wind a little loosely and to fix two extra sticks above and below the threads across the ends of the frame, to bring the threads together evenly and with even tension.

The plans were made with the class, with a view to the size of the piece of cloth which they wished to make, and the children carried out these plans as they had drawn them. Drawing to scale was undertaken by them for the first time, and in most cases, it was the first time the children had used carpenter's tools. It was a novel and interesting experience for them, and they took much pleasure in it. Much was learned in this connection: How the wood was to be held for sawing and for planing; how to saw the ends squarely; how to hammer nails into the pieces without splitting the wood; how to get the corners square; and how to use the try-square. The pupils worked in pairs and helped each other. There were only a few tools and the situation involved co-operation in their use. Some of the girls finished their plans

before others and were thus able to begin the wood-work before the others, so that a set of four of each kind of tool sufficed for a class of twenty girls. One small bench with a *vise* was available, but most of the work was done on the edges of the school verandah which was about 26 inches above the ground. Careful guidance was necessary throughout, to insure care in the use of the tools and in cutting the pieces and fitting them. Frequent discussions were held to meet the difficulties as they came up. Measuring with a foot-rule both for the drawing and the frame and for the lines of the warp-strings demanded careful, accurate work and the results were seen accordingly in a good or poor frame.

Suggestions for many arithmetic problems arose from the various needs of measuring and deciding on proportions of length to breadth, with reference to size of the cloth to be woven. These problems were later solved in the arithmetic-period.

III. Next came the actual *Weaving of a Piece of Cloth*.

The previous Project of the weaving-frame was carried through as a means to the main aim of actually weaving a small piece of cloth. The experiment with cardboard looms had produced a usable result in the way of a table-mat or duster, and the pupils could see the possibilities of some better product which they themselves could make. The frames, then, were prepared in order to carry out this main purpose.

Cotton or jute-strings or twine were used for the warp-threads, which were wound back and forth from the nails on each end stiek, passing each string twice around its nail to make it hold better. The weft was ordinary white cotton-yarn, as bought in skeins in the bazaar. The skein was cut across and separated into bunches of about twenty threads which were used as one "thread". The weft-threads were thus of a convenient length and coarse enough to work with easily and quickly. (It would be possible in some places

to get high-grade cotton waste to use in this manner, as in making rugs or *dhurries*.) Weaving-needles were made of thin pieces of pine or teak wood about $\frac{1}{2}$ inch wide and $12\frac{1}{2}$ inches long. A hole was bored (or burnt, to prevent splitting) in one end, through which the weft-threads were passed. The needles were sand-papered smooth. A weft-thread was tied to the first warp-thread at the lower end, and by means of the needle was woven in and out of the warp-strings. When the end was reached, this was knotted to another weft-string, the knot being tied on the *under side* of the piece. The tendency for the edges of the pieces to be drawn in by the pulling of the weft-threads too tightly was noted by some of the girls, and was met by tying the outer warp-thread in its position by means of a string tied to the side stick of the frame.

Another way was in imitation of what the students had observed in the weaver's house, and a second excursion was made to observe this again. A stick was taken and a sharp nail put in each end the full width of the cloth. This was fastened across the edge of the cloth, being woven to keep it in the proper width. Packing the weft-threads was done with the fingers, each time a new weft-thread was woven across the warp-threads. Some pupils packed loosely and others tightly, with results that, of course, showed in the product. When the pieces were completed, the warp-strings were cut across near the nails and were knotted (in some cases, braided) so as to hold the last weft-thread in place, and to finish off the piece. The pupils worked on the verandah of the school, sitting on the floor with their frames resting against the walls of the building.

Results.—In most cases, a satisfactory piece was woven. The pieces were compared and judged by the pupils, the reasons for loose weave and uneven edges being investigated and noted. Not all finished together; but this was not essential to the Project, which involved individual experiment and skill. Those who finished first went on to the next Project, which naturally grew out of this one. Great satisfaction

was expressed over these pieces of "cloth". They were useful as table-mats, wash-cloths and dusters.

The buying of the strings and the skeins of cotton thread and the calculation of the lengths needed gave work which passed over into the arithmetic period; while the inquiries into the origin of the skeins of cotton thread passed over into the geography class.

It is possible for a good many other Projects to grow out of this one. The investigation of spinning and the study of the spinning process would be one of these. Twine-making and rope twisting could be taken up. The study of cotton and its growth and actual cultivation would be another. The study of cotton-producing and cotton-manufacturing countries and commerce in the same would be another. The economic and social life of the village weaver would be a useful social study. Many interests are stimulated by this actual study of the process and the handling of the materials.

IV. It was only a short step on to more advanced Projects,—*Weaving a Design of Coloured Stripes and Improving the Process.*

The weaving of the piece of cloth revealed several problems—problems which are met and solved by the loom, which is a machine developed from a rough frame such as the pupils had experimented with. The device and arrangement of the 'heddle', whereby alternate threads are raised and lowered in order that the shuttle may pass back and forth, is too complicated for the average girl of this age (12—14) to comprehend readily; and yet the need and desirability of the heddle was found in the actual process of experiment which each girl went through. Similarly the 'slay' of the loom, which keeps the warp-threads apart and presses each weft-thread into place, is a refinement not thoroughly understood except through long experience. But the desirability of some way of pressing the threads together uniformly became apparent through actually going through the process.

The keeping of the edges straight and the cloth piece of full width continued to be a problem throughout. The possibility of using a shuttle was impressed upon them by the need for heddles; and they realised the desirability of having a device for weaving long pieces of cloth quickly. It was with some appreciation of these problems that the girls planned their next project—the use of colours in the making of cloth, and the attempt to make it finer and better than the last. The last piece had showed the possibilities and the pupils were eager to use their loom-frames again for making a useful piece such as a coloured table-mat, or chair-back “towel”, or wall decoration.

So coloured yarns were purchased from the bazaar: yellow, dark blue, green and red. A plan was drawn to scale on paper by each girl to show the exact size of the proposed piece. (The second year we had “squared” paper marked off in little $\frac{1}{8}$ inch squares, which made the work easier.) On these plans the position of the coloured stripes was indicated and, after consultation with the guide, the colours were put in by coloured pencils. The girls needed considerable help in this, by way of suggestions as to good ways of arrangement of the colours, and spacing. There are infinite possibilities, but from the outset the students can be guided in their choices. This piece was kept simple; the main body of the cloth being white, with one or more stripes of varying width, and colours tastefully spaced across the middle and near either end of the piece.

Bunches of about 10 threads were used for both the warp and weft, which was strung and woven as described in the previous project. The students worked with their plans before them and measured their work with their rules. If a girl wished to change her plan with respect to the position, width or colour of the stripes she was permitted to do so, if possible by revising her plan.

The girls had noticed in their excursion the way the weavers kept the alternate threads separated by inserting sticks at intervals across the warp. So they

made some flat stieks out of their strips of wood and out of palmyra palm-leaf stems, and used them in their work. They discovered that by turning one stick on its edge the action of a heddle was produced and the needle could be passed through very quickly. The stick also served as a guide to keep the woven edge straight. Some girls also made a heddle by fastening loops of string to the alternate threads and fastening these to a stiek on the back of the frame. By pushing down this stick the alternate threads could be depressed and the needle passed through quickly.

Results.—The pieces thus produced were better woven than the previous ones, and the colour and patterns much admired. The girls were gaining increased insight and skill in the weaving process, and were beginning to develop taste and judgment in the use of colours and designs. The various products were brought to the class as a whole for judging, and the best three were selected for keeping in the school exhibition.

The coloured yarns introduced the question of dyeing. This was investigated and some yarns were dyed by the students themselves the following year. The differences in costs between coloured yarns and uncoloured was noted for arithmetic problems. The sources of various dyes were also investigated, and the indigenous method of dyeing the finished cloth was reported.

V. The next stage was the *Making of Coloured Designs through both Warp and Weft-Threads.*

The possibility of using some coloured threads in the warp as stripes was seen in the last project, and the girls were anxious to try this out in their next piece. Two possibilities were revealed in the planning, and both were carried out on different occasions. One was the making of coloured borders or stripes near the cloth edges or through the centre, the main body of the piece being white as before. The other was the

possibility of making "plaid" cloths by running colours side by side both in the warp-threads and in the weft-threads.

The designs were carefully planned, as in the previous Project, and the work was done with the plans before the students. Warp and weft-threads of ten threads each were used as before.

This time, the products were really beautiful, and gave entire satisfaction. Some of the 'plaid' pieces were unexpectedly attractive, and were much better woven than before; showing that increased skill had been obtained through practice. Some girls were much more skilful than others and showed greater aptitude. Such an experience is desirable in pre-vocational work, to show which girls are likely to become efficient weavers on a regular loom.

VI. *Making Patterns in the Weaving of Cloth.*

The possibility of making patterns in the 'weave' itself was noted at the outset. Weaving the weft-threads over two and under one and starting each successive line accordingly gave a pretty diagonal weave which could be varied in many interesting ways. The use of colours in this connection added much and it was discovered that such a method intensified the showing of the stripe across a white warp.

As a short project, narrow belts or bands were made of colours using beads in the weft threads and were made on the same loom frames.

VII. *The girls now turned to Modifications and Improvements in Looms.*

Students who showed taste and interest in weaving now experimented further with loom construction. After a time, they made a long frame about 8 by 4 feet on which they could weave fair-sized towels, rugs, and seat and table-covers.

Wooden heddles were also developed, and the threads strung through so that when each heddle was lifted up or down the alternate threads of the warp

were lifted or depressed. The needle could thus be pushed through quite easily, and much time saved. Three or four pupils worked together on this loom.

Up to this point the pupils had been using a coarse warp and a weft made of several strands. The next experiment was in the direction of a simple loom to use single threads and to weave longer pieces of cloth. The chief difficulty was found in preparing the warp, using sizing, etc. Unless it is proposed to learn weaving on a loom as a handicraft, I do not advocate going into this difficult and technical process. Our students did make, however, a box-loom with rollers, somewhat like the one shown in Bonser and Mossman's *Industrial Arts in the Elementary School*. It was about 3 by 2 feet and had a heddle and slay combined. We used ordinary thread and sized it with sizing made of wheat flour; but we were troubled with the threads breaking. If a better quality of twisted thread were used at the outset, it would stand more handling. The warp was stretched on a stick stuck into the ground, such as Indian weavers have. For this the skeins were unwound on two spools. This apparatus was made by students after visiting a weaver's house and observing carefully the process. For weaving, wooden needles were first used and a simple shuttle was later developed. Two sticks with sharp nails in the ends were made to keep the cloth in the proper width. All this brought the pupils face to face with the technical difficulties to be overcome in order to develop a loom which would weave long pieces of cloth and use a shuttle.

VIII. Conclusion.

We found that the general interest involved in studying how cloth was made was fundamental, and helped the students of the Sixth Standard to focalize and express certain important motives and purposes. It had in it many possibilities of a variety of activities, which were educative in themselves, developing skill, appreciations, knowledge and social attitudes.

were also frequently suggestive of further activities leading to broader and more extended investigations and efforts. The many opportunities for individual experimentation in the various activities were significant for pupils of this age. But this Project needs at all times, both for the class and for the individuals, the careful guidance of a teacher who will himself take the experimental attitude.

- *Udupiddi.*

CHARLES W. MILLER.

XVII

SCHOOL GARDENING

DR. DEWEY has said, "When a pupil learns by doing, he is re-living both mentally and physically some experience which has proved important to the human race; he goes through the same mental processes as those who originally did these things, because he himself has done them. He knows the value of the result, that is the fact. A statement even of fact does not reveal the value of the fact, or the sense of its truth or of the fact that it is a fact. When children are fed only on book-knowledge one fact is as good as another; they have no standard of judgment or belief." In another place he says about the new type of education: "It aims that the pupils shall form the habit of connecting the limited information they require with the activities of life, and gain ability to connect a limited sphere of human activity with the scientific principles upon which its success depends."

At Ghal Kalan, a village four miles from Moga, I am just endeavouring to follow the principles of the new type of education propounded in the above quoted lines—the type of education that affords the fullest and richest development of the child's personality. Last year I introduced the story-method of teaching-reading to the infants, and in five months' time the boys were quite fit for promotion to the second standard.

This year I wished to try the Project Method. The difficulties were many. The first and chief was in getting a sufficiently intelligent teacher who could work on the new lines. Unfortunately there are very few teachers trained in the new method. Even those who have received some training are not sufficiently

well grounded to work with this method without constant supervision and guidance. To make up this deficiency I undertook to train the teachers already working in the schools. The Rev. A. E. Harper, Principal of the Mission School, Moga, was of much help to me in this onerous task. Besides personally visiting the school with me on many occasions, he very generously allowed me and my teachers to make full use of his library.

The next question was how to get the co-operation of school children who generally come from poor homes and, being limited in experience, are handicapped in the suggestions and ideas so very necessary for the success of this method. This becomes all the more important when it is borne in mind that in the school as well as in their homes they find little or no opportunity to develop their originality. Unless the children have a real goal, they can have no interest that will arouse their co-operation, or impel them to take the steps necessary to achieve their purpose. It was therefore the teacher's part to create a situation which would bring about a proper response from the pupils; for a project, to be ideal, must be one which the children themselves propose, plan, execute and judge. It should be one which is related to real life; one in which the children participate in purposeful activity the results of which please them. How this situation was created will be described later. Many problems arise also in working out a Project, and teachers need experience in order to meet wisely the new situations. These difficulties must be anticipated, for no one pretends that Project teaching will solve all the questions of instruction and discipline. In fact a live Project cannot but create many unusual situations. The only thing that anyone has ever promised for the Project is that in working out a problem which he wants to solve, the child acquires in addition to the ordinary facts and figures, concomitant values of even greater worth.

The following is a brief description of the Project

and its related activities undertaken by the Ghal Kalan School:

The situation from which the Project arose were as follows:—We were just thinking of making certain alterations in the building in order to facilitate the working of the various classes, when Mr. Harper suggested the idea of laying out a small flower-garden in the school compound. This started the ball rolling.

The children of the Third and Fourth Class undertook this work. With their tiny hands they broke the hard earth into fine dust, prepared small beds and sowed some flower and vegetable seeds. Water was given regularly from the well near by and every care was taken for protection against destruction by boys and animals. But despite all this labour and care not a single plant came up! They tried once again, but again failed. Then they bought wooden boxes from the bazaar and filled them with dust from the fields, but the seeds did not sprout even then. Here was an opportunity for the teacher to step in. So I said to them, "Boys! Do you know why your seeds did not germinate?" There were different answers from different boys. Some said that the water of the well was bad, others said that there was some defect with the land or the seeds. I remarked, "Do you know how plants grow and live?" The reply was in the negative. "You will grow a very nice flower garden if you know a little about the plants," said I. This was enough to arouse their interest—whole-hearted interest that results in purposeful activity. As in all worth-while projects, achievements were attained in subject-matter and good habits were formed while the Project was being worked out. As the children sought to find the answer to their original problem, they learned to use several sources of information. As new problems arose, they searched further for answers. They were stimulated by a "felt need".

The books prescribed by the Textbook Committee for the Third and Fourth Class pupils contained two

lessons on "How plants live" and "How trees grow". The teacher asked the boys to study the two books carefully in order to find an answer to their problem. From this study they learnt by actual experiments the function of roots and leaves and the fact that plants need food, light and air for their proper growth. They can absorb only food that is dissolved in water. The soil generally contains food required for the growth of the plants. Water is essential to liquefy it.

The question then further resolved itself into a more difficult problem. Why did not the plants grow in the particular plot prepared by the students? Was there some defect in the water of the well or in the soil of that plot? The examination of both needed much advanced knowledge. However, a simple book, *Asul-i-sarait* (*The Principles of Agriculture*), within the grasp of the children, was found, and the children began to study it. Many interesting experiments regarding the constituents of soil and the impurities of water were performed, and the children came to the conclusion that there was some defect in the water. They inquired about this from the Agricultural Assistant who corroborated the result arrived at by the children. The personal experience of the people also confirmed this idea, as they know that with rain-water the same soil becomes very much more productive.

Now the question took another turn—how to improve the water of the wells? Boring was suggested by some, but it was pointed out that the experiment was very expensive and had failed in many cases. Luckily at this time boring trials were being conducted in the local railway station compound. This gave the children another opportunity to get first-hand information about this operation. They paid several visits to the railway station and acquired much useful information about boring. The right strata were found at a depth of 137 feet where a pump has now been fixed. The children have collected and presented in their show-room various samples of the rock pierced through in the course of the boring operation. They

have also learnt why water was sent for examination to the Chemical Examiner, who decided whether it was fit for human consumption or not. They were wonder-struck to know that water which looked pure contained certain ingredients detrimental to the health of a living organism. From the officer in charge of the boring department they also inquired about the probable amount of money required for boring a well. They thus prepared a report about the improvement of wells for irrigation purposes.

The study of plant life was, as we have seen, the original Project; but from this, through the study of improving wells, they came upon a very interesting problem, *viz.*, finding out the methods of irrigation in the Punjab. The boys have traced out the history of the *King Wah Canal*—a non-perennial canal—which gives water to Ghal Kalan and the neighbouring villages. They learnt something about the administration of this canal. They went on an excursion to the Gill branch of the Sirhind Canal, and acquired much useful information about the perennial canals, inquiring from the officer how their village could get water from this canal. They sent a committee of six boys to the Hussainiwala Canal Head-works to report about the Suttle Valley Project. Thus the simple project which began with the study of plant life ended with the study of the canals of the Punjab!

ACTIVITIES CARRIED ON IN WORKING OUT THIS PROJECT.

A. Language Work.

- (a) *Oral Composition*:—Discussion in and outside the class.
- (b) *Reading*:—Besides the two chapters in their textbooks they read many related chapters from *Asul-i-zarait*, *Kheti ki kitab*, *Asbaq-ul-zarait*, an Urdu science book and *Punjab ki Nahren*. Many new and useful words and phrases were added to their vocabulary.

- (c) *Letter-writing and Composition, e.g.*, letters to the Head Master, Dev Samaj High School, (a) asking for the loan of a microscope, and (b) thanking him for the loan of the microscope—Application to the teacher for taking them on an excursion to the railway station and the Gill Canal—Letter to the Assistant Deputy Inspector, asking him to supply certain maps—Written answers to the questions of the teacher—A brief account of the work done in connection with the project, and description of experiments performed.
- (d) *Spelling and Dictation.*—All the new words learnt were written out several times and occasional tests in dictation were given.

B. Science and Agriculture.

The following experiments were performed:—

Experiments illustrating the functions of the roots and the leaves—Microscopic examination of the root cells—The effect of light on the germination of the seed—Separation of soluble and insoluble substances in water—Microscopic examination of a drop of water from a pond—Finding out the various constituents of soil, *e.g.*, determining the quantity of sand, lime, vegetable substance and water in the soil.

C. Arithmetic.

- (a) Fourth Class: Measurement of the plot and finding its area—Measurement of the wooden boxes and finding the area of the outer sides for colouring—Oral questions with regard to the wages of labourers, etc.
- (b) Third Class: Compound multiplication—Actual purchase of boxes from the bazaars; estimating the wages of the labourers working at the railway station during the boring operation; finding out the cost of the pipes, etc. Interest—Some idea of the Government loans for undertaking work of such magnitude as canals and railways.

D. Geography.

Relation between the soil, seasons and crops of the locality.—Various means of irrigation in the locality: (a) wells, (b) perennial canals, (c) non-perennial canals; tracing the history of King Wah Canal; excursion to the Gill branch of the Sirhind Canal; excursion to Hussainiwala Canal Head-works; canals of the Punjab; produce of the Punjab.

E. Drawing.

Drawing sketches of simple apparatus; map of the King Wah Canal; plans of the canal head-works at Hussainiwala; map showing the canals of the Punjab.

The teachers in the school feel convinced that the pupils now not only get through with as much book work as they did when practically all their time was given to it, but that they actually do their work better, because of the motive furnished by the Projects. Besides the primary learning there have been "attendant-learnings" too. These include self-confidence, co-operation with other boys, responsibility and interest in thinking out for themselves.

Mr. J. A. Stevenson says, "The Project is a problematic act carried to completion in its natural setting." Let us see if our Project fulfilled these conditions. (1) *It must be a problematic act.* The growing of plants was certainly a problem for the pupils. They wanted to find out *why* the plants did not grow, despite their best labours. (2) *It must be carried to completion.* The pupils were required to find a solution for the problem before them. They came to the conclusion that the defect lay chiefly with the water of the well. The agricultural inspector corroborated their findings. The solution lay in the boring of the well and they were able to find out roughly the cost of boring a well. (3) *It must be in its natural setting.* The brief account given above shows that the pupils tried to acquire first-hand

information about all the problems arising before them. Experiments and excursions to important places were most conspicuous in this activity. Where can a more complete type of Project Teaching be found than one which thus meets the requirements noted above?

Moga,

INDAR SINGH.



EPILOGUE

THE "PLAY-WAY" IN GEOGRAPHY

(Written and decorated by the Standard II Girls of the United Missionary High School, Calcutta.)

UNTIL that day we had never known what Geography was. So when first 'Iridi' said "To-day we shall learn some Geography", we thought, "What in the world is that? Is it an animal?" And we all looked at 'Didi' wondering what we should hear.

First, we listened to stories about the sun and the moon and the earth, then how day and night happened. We were astonished and happy, and our one thought was, "We shall learn more!" In time we heard about rivers and hills and capes and ports and seas and bays. We were by then not merely surprised, but bursting with delight in it all. We drew outlines of rivers and hills and all the rest, coloured them, made books out of paper, and pasted in our little pictures and wrote about them. As we did this we supposed there were not such happy children anywhere, not any who had ever learnt such interesting things.

How we loved Wednesdays! Every day we thought, "When will it be Wednesday? That's the day for fun! The day for stories of different countries, their trees, flowers, fruits, animals and their boys and girls!" And what pretty pictures we looked at and learnt from! Then too we made houses, rickshaws and boats out of paper. We modelled men, animals, fruit and flowers in clay. Then we cut out pictures of boys and girls of different countries, and birds, and much else, coloured them and

The design above is based upon the Bengali letter *প*.

pasted them on a large piece of paper and hung them in our classroom until it looked like an Exhibition.

So far we've learnt about Eskimos and Red Indians and Arabs, Africans, Japanese and Italians!

We've been sewing bags of gunny and doing pictures of some of these peoples on them in wool, Eskimos and desert-folk, particularly. We cannot tell you what fun it has been. At night we dream about children of one country after another. We dream that we are playing with them, that they come to our country and are calling us to theirs. We have great conversations with them in our dreams!

Truly we've learnt much Geography, and we suppose we'll go on, all our lives, learning it like this, modelling in sand, fashioning in paper, drawing and sewing, and we're always anxious to go on making something else.

One day we had a Mothers' Party at school. Our class dressed up in costumes of different places and acted certain scenes from the life of the people belonging to them.

We have discovered how many ways there are of learning! We learn Geography by playing it. That is why we like it so much.

And now we know how full the world must be of things to learn, for we've had such surprises in Standard II! We've discovered so much about people of other countries that it seems as if we've actually visited them, for there are vivid pictures of them in our minds. What a good life is this! Cheers for the imaginary walks abroad we have into interesting places, and cheers for the imaginary talks we have with their people, in Standard II!

(Translated from the Bengali by ELEANOR RIVETT.)



The design is based upon the Bengali letter **খ**.

APPENDIX

SELECTED BIBLIOGRAPHY

A. THE PROJECT METHOD IN PRINCIPLE AND PRACTICE.

- BARBOUR, DOROTHY D., *Making the Bible Desired*. Doubleday, Doran, 1928, \$1.50; M. E. Press, Madras, Rs. 4—8—0.

Written in China, the book comes nearer to the Indian situation than books written in Western countries. In untechnical language we follow the experiments of a group of teachers who introduce Project Principles into their teaching of the Bible. Principles, methods, and concrete illustrations are knitted closely together.

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- HOSIC, J. F. and CHASE, S. E., *Brief Guide to the Project Method*. World Book Co., 1924, \$1.80; Association Press, Calcutta. Rs. 5—10—0.

- KILPATRICK, WM. H., *The Project Method*. The use of the purposeful art in the Educative Process. Teachers' College, N. Y., 1918, \$0.25; Association Press, Calcutta. As. 15.

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KILPATRICK, WM. H., *How We Learn*. The Psychological Basis of the Project Method. Talks delivered before the Vellore Educational Conference, Dec. 1926. Edited by Mason Oleott, Ph.D. Association Press, Calcutta, 1928, Rs. 1—8—0; Paper, Re. 1.

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KILPATRICK, WM. H., *Education for a Changing Civilization*. Macmillan, 1926, \$1.00; Association Press, Calcutta, Rs. 3—6—0.

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- STEVENSON, J.A., *The Project Method of Teaching*. Macmillan, 1924, \$1.80; Association Press, Calcutta, Rs. 6-12-0.

Deals first with the theory, and then with its applications to the curricula of elementary and secondary schools.

- VAN DOREN, A. B., Editor, *Fourteen Experiments in Rural Education*. Association Press, Calcutta, Paper, Rs. 1-4-0; Cloth Rs. 2-0-0.

Accounts of various Indian schools where experiments are being tried out, many of them along Project lines. The descriptions are written by the persons who are carrying out the experiments which include middle and training schools, the cottage and model village systems.

B. USEFUL BOOKS ON INDUSTRIAL METHODS AND MATERIALS.

- BONSER, F. G. and MOSSMAN, LOIS, C., *Industrial Arts for Elementary Schools*. Macmillan, N. Y. Rs. 7-8-0.
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C. BOOKS ON DYEING.

[All obtainable from the Y. M. C. A. Reconstruction Centre, Ramanathapuram, Coimbatore, S. India.]

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